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Publications of Prof. Alexandra NAVROTSKY

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PUBLICATIONS - RESEARCH PAPERS

"Enthalpies of Mixing in Silver Bromide-Alkali Bromide and Thallium Chloride-Alkali Chloride Liquid Mixtures," L. S. Hersh, A. Navrotsky, and O. J. Kleppa, *J. Chem. Phys.*, 42, 3752-3757 (1965).

"High-Temperature Calorimetry in Liquid Oxide Systems. III. The Enthalpy of Formation of Magnesium-Aluminum Spinel," A. Navrotsky and O. J. Kleppa, *Inorg. Chem.*, 5, 192-193 (1966).

"A Calorimetric Study of Molten Na_2MoO_4 - MoO_3 Mixtures at 970 K," A. Navrotsky and O. J. Kleppa, *Inorg. Chem.*, 6, 2119-2121 (1967).

"Enthalpy of Transformation of a High-Pressure Polymorph of Titanium Dioxide to the Rutile Modification," A. Navrotsky, J. C. Jamieson, and O. J. Kleppa, *Science*, 158, 388-389 (1967).

"Enthalpy of the Anatase-Rutile Transformation," A. Navrotsky and O. J. Kleppa, *J. Am. Ceram. Soc.*, 50, 626 (1967).

"The Thermodynamics of Cation Distributions in Simple Spinel," A. Navrotsky and O. J. Kleppa, *J. Inorg. Nucl. Chem.*, 29, 2701-2714 (1967).

"Thermodynamics of Formation of Simple Spinel," A. Navrotsky and O. J. Kleppa, *J. Inorg. Nucl. Chem.*, 30, 479-498 (1968).

"Thermodynamics of A_3O_4 - B_3O_4 Spinel Solid Solutions," A. Navrotsky, *J. Inorg. Nucl. Chem.*, 31, 59-72 (1969).

"Enthalpies of Formation of Some Tungstates MWO_4 ," A. Navrotsky and O. J. Kleppa, *Inorg. Chem.*, 8, 756-758 (1969).

"Phase Equilibria and Thermodynamic Properties of Solid Solutions in the Systems ZnO-CoO-TiO_2 and ZnO-NiO-TiO_2 at 1050 °C," A. Navrotsky and A. Muan, *J. Inorg. Nucl. Chem.*, 32, 3471-3484 (1970).

"Synthesis of Mg_2GeO_4 from Tetraethylorthogermanate," A. Navrotsky, *J. Am. Ceram. Soc.*, 53, 696 (1970).

"Activity-Composition Relations in the Systems CoO-ZnO and NiO-ZnO at 1050°C," A. Navrotsky and A. Muan, *J. Inorg. Nucl. Chem.*, 33, 35-47 (1971).

"The Intracrystalline Cation Distribution and the Thermodynamics of Solid Solution Formation in the System FeSiO₃-MgSiO₃," A. Navrotsky, *Amer. Miner.*, 56, 201-211 (1971).

"Enthalpies of Transformation Among the Tetragonal, Hexagonal and Glassy Modifications of GeO₂," A. Navrotsky, *J. Inorg. Nucl. Chem.*, 33, 1119-1124 (1971).

"The Enthalpy of the Ilmenite-Perovskite Transformation in Cadmium Titanate," J. M. Neil, A. Navrotsky, and O. J. Kleppa, *Inorg. Chem.*, 10, 2076-2077 (1971).

"Synthesis of Uvarovite Using a Sodium-Potassium-Borate Flux," J. Lowell, A. Navrotsky, and J. R. Holloway, *J. Am. Ceram. Soc.*, 54, 466 (1971).

"Thermodynamics of Formation of the Silicates and Germanates of Some Divalent Transition Metals and of Magnesium," A. Navrotsky, *J. Inorg. Nucl. Chem.*, 33, 4035-4050 (1971).

"Approximate Activity-Composition Relations in the System MgO-ZnO at 1205 ± 5 °C," D. S. Kenny and A. Navrotsky, *J. Inorg. Nucl. Chem.*, 34, 2115-2119 (1972).

"Thermodynamic Relations Among Olivine, Spinel and Phenacite Structures in Silicates and Germanates: I. Volume Relations and the Systems NiO-MgO-GeO₂ and CoO-MgO-GeO₂," A. Navrotsky, *J. Solid State Chem.*, 6, 21-41 (1973).

"Thermodynamic Relations Among Olivine, Spinel and Phenacite Structures in Silicates and Germanates: II. The Systems NiO-ZnO-GeO₂ and CoO-ZnO-GeO₂," A. Navrotsky, *J. Solid State Chem.*, 6, 42-47 (1973).

"Discussion of 'Equilibrium Cation Distributions in NiAl₂O₄, CuAl₂O₄, and ZnAl₂O₄'," A. Navrotsky, *J. Am. Ceram. Soc.*, 56, 106 (1973).

"Estimate of Enthalpies of Formation and Fusion of Cordierite," A. Navrotsky and O. J. Kleppa, *J. Amer. Ceram. Soc.*, 56, 198-199 (1973).

"Ni₂SiO₄ -Enthalpy of the Olivine-Spinel Transition by Solution Calorimetry at 713°," A. Navrotsky, *Earth Planet. Sci. Lett.*, 19, 471-475 (1973).

"Sillimanite—Disordering Enthalpy by Calorimetry," A. Navrotsky, R. C. Newton, and O.J. Kleppa, *Geochim. Cosmochim. Acta*, 37, 2497-2508 (1973).

"Enthalpy of the Olivine-Spinel Transition in Magnesium Orthogermanate and the Thermodynamics of Olivine-Spinel-Phenacite Stability Relations," A. Navrotsky, in "Phase Transition-1973, Proceedings of the Conference on Phase Transitions and their Applications in Materials Science, University Park, Pa., May 23-25, 1973," L. E. Cross, Ed., *Pergamon Press*, 393-398 (1973).

"Thermodynamics of Binary and Ternary Transition Metal Oxides in the Solid State," A. Navrotsky, in "MTP International Reviews of Science, Inorganic Chemistry, Series 2, Vol. 5," D. W. A. Sharp, Ed., *Butterworths-University Park Press, Baltimore, MD*, 29-70 (1974).

"Thermodynamic Relations Among Olivine, Spinel and Phenacite Structures in Silicates and Germanates: III. The System CuO-MgO-GeO₂," A. Navrotsky, *J. Solid State Chem.*, 11, 10-16 (1974).

"Festkörperthermodynamik: Chemie des festen Zustandes," H. Schmalzried and A. Navrotsky, *Verlag Chemie, Weinheim, Germany* (1975). (In German).

"Thermodynamic Relations Among Olivine, Spinel and Phenacite Structures in Silicates and Germanates: IV. The System ZnO-MgO-GeO₂," A. Navrotsky, *J. Solid State Chem.*, 12, 12-15 (1975).

"Stability of Two Cobalt Titanate Defect Spinel," J.P. Sharples and A. Navrotsky, *J. Solid State Chem.*, 12, 122-126 (1975).

"Thermodynamics of Formation of Some Compounds with the Pseudobrookite Structure and of the FeTi₂O₅-Ti₃O₅ Solid Solution Series," A Navrotsky, *Amer. Miner.*, 60, 249-256 (1975).

"Ionicity and Phase Transitions at Negative Pressures," A. Navrotsky and J. C. Phillips, *Phys. Rev. B*, 11, 1583-1586 (1975).

"Thermochemistry of Chromium Compounds, Especially Oxides at High Temperature," A. Navrotsky, *Geochim. Cosmochim. Acta*, 39, 819-832 (1975).

"Silicates and Related Minerals: Solid State Chemistry and Thermodynamics Applied to Geothermometry and Geobarometry," A. Navrotsky, *Prog. Solid State Chem.* 11, 203-264 (1976).

"Thermodynamic Relations Among Olivine, Spinel and Phenacite Structures in Silicates and Germanates: V. The System MgO-'FeO'-GeO₂," A. Navrotsky and L. Hughes, Jr., *J. Solid State Chem.*, 16, 185-188 (1976).

"High Temperature Heat Content and Diffuse Transition in Lead Fluoride," C. E. Derrington, A. Navrotsky, and M. O'Keeffe, *Solid State Comm.*, 18, 47-49 (1976).

"Co²⁺ as a Chemical Analogue for Fe²⁺ in High Temperature Experiments in Basaltic Systems," W. E. Coons, J. R. Holloway, and A. Navrotsky, *Earth Planet. Sci. Lett.*, 30, 303-308 (1976).

"Spinel Disproportionation at High Pressure: Calorimetric Determination of Enthalpy of Formation of Mg₂SnO₄ and Co₂SnO₄ and Some Implications for Silicates," A. Navrotsky and R. B. Kasper, *Earth Planet. Sci. Lett.*, 31, 247-254 (1976).

"Thermochemistry of Some Pyroxenes and Related Compounds," A. Navrotsky and W. E. Coons, *Geochim. Cosmochim. Acta*, 40, 1281-1288 (1976).

"Calculation of Effect of Cation Disorder on Silicate Spinel Phase Boundaries," A. Navrotsky, *Earth Planet. Sci. Lett.*, 33, 437-442 (1977).

"Calculation of Subsolidus Phase Relations in Carbonates and Pyroxenes," A. Navrotsky and D. Loucks, *Phys. Chem. Min.*, 1, 109-127 (1977).

"Refinement of the Crystal Structure of Mg₂GeO₄ Spinel," R. B. Von Dreele, A. Navrotsky, and A. L. Bowman, *Acta Cryst.*, B33, 2287-2288 (1977).

"Chemical Thermodynamics - Areas of Current Interest," A. Navrotsky, *Bull. Chem. Thermodyn.*, 20, 573-576 (1977).

"Geological Applications of High Temperature Reaction Calorimetry," A. Navrotsky in "Thermodynamics in Geology, Proceedings of the NATO Advanced Study Institute held in Oxford, England, 17-27 Sept. 1976," D. G. Fraser, Ed., *D. Reidel Publishing Co., Dordrecht, Holland*, 1-10 (1977).

"Progress and New Directions in High Temperature Calorimetry," A. Navrotsky, *Phys. Chem. Miner.* 2, 89-104 (1977).

"Thermodynamics of Element Partitioning: (1) Systematics of Transition Metals in Crystalline and Molten Silicates and (2) Defect Chemistry and the Henry's Law Problem," A. Navrotsky, *Geochim. Cosmochim. Acta*, 42, 887-902 (1978).

- "Experimental Study of the Electronic and Lattice Contribution to the VO₂ Transition," F. Pintchovski, W. S. Glausinger, and A. Navrotsky, *J. Phys. Chem. Solids*, **39**, 941-949 (1978).
- "Solid State Thermodynamics," H. Schmalzried and A. Navrotsky, *Akademie-Verlag: Berlin* (1978).
- "Direct Calorimetric Measurement of Enthalpies of Aqueous Sodium Chloride Solutions at High Temperatures and Pressures," R. B. Kasper, J. R. Holloway, and A. Navrotsky, *J. Chem. Thermodyn.*, **11**, 13-24 (1979).
- "Calorimetric Study of the Stability of High Pressure Phases in the Systems CoO-SiO₂ and "FeO"-SiO₂ and Calculation of Phase Diagrams in MO-SiO₂ Systems," A. Navrotsky, F. S. Pintchovski, and S. Akimoto, *Phys. Earth Planet. Interiors*, **19**, 275-292 (1979).
- "Thermodynamic Parameters of CaMgSi₂O₆-Mg₂Si₂O₆ Pyroxenes Based on Regular Solution and Cooperative Disordering Models," T. J. B. Holland, A. Navrotsky, and R. C. Newton, *Contrib. Mineral. Petrol.*, **69**, 337-344 (1979).
- "Calorimetry: It's Application to Petrology," A. Navrotsky, *Annual Review of Earth and Planetary Sciences* **7**, 93-115 (1979).
- "Application of High Temperature Calorimetry to Mineral Reactions," A. Navrotsky, in "Iwanami Series of Geoscience, Vol. 4, Materials Science of the Earth III, Geochemistry of Rocks and Minerals," S. Banno and Y. Matsui, Eds., *Iwanami Publishing Co., Tokyo, Japan*, 127-143 (1979). (In Japanese).
- "The Igneous System CaMgSi₂O₆-CaAl₂Si₂O₈-NaAlSi₃O₈: Variations on a Classic Theme by Bowen," D. F. Weill, R. Hon, and A. Navrotsky, in "Physics of Magmatic Processes," R. B. Hargraves, Ed., *Princeton Univ. Press*, 49-92 (1980).
- "Thermodynamic Parameters of CaMgSi₂O₆-Mg₂Si₂O₆ Pyroxenes Based on Regular Solution and Cooperative Disordering Models, Reply to Discussion," T. J. B. Holland, A. Navrotsky, and R. C. Newton, *Contrib. Mineral. Petrol.*, **75**, 305-306 (1980).
- "Thermochemistry of Glasses and Liquids in the Systems CaMgSi₂O₆-CaAl₂Si₂O₈-NaAlSi₃O₈, SiO₂-CaAl₂Si₂O₈-NaAlSi₃O₈, and SiO₂-Al₂O₃-CaO-Na₂O," A. Navrotsky, R. Hon, D. F. Weill, and D. J. Henry, *Geochim. Cosmochim. Acta*, **44**, 1409-1423 (1980).
- "Lower Mantle Phase Transitions May Generally Have Negative Pressure - Temperature Slopes," A. Navrotsky, *Geophys. Res. Lett.*, **7**, 709-711 (1980).
- "Lattice Stabilities of AX and AB₂O₄ Compounds," A. Navrotsky, *Calphad.*, **4**, 255-264 (1980).
- "A Thermochemical Calculation of the Pyroxene Saturation Surface in the System Diopside-Albite-Anorthite," R. Hon, D. J. Henry, A. Navrotsky, and D. F. Weill, *Geochim. Cosmochim. Acta*, **45**, 157-161 (1981).
- "A Thermochemical Study of the Phase Reaction (1/7)Pr₇O₁₂ + (1/7 - x/2)O₂ = PrO_{2-x}," H. Inaba, A. Navrotsky, and L. Eyring, *J. Solid State Chem.*, **37**, 67-76 (1981)
- "A Thermochemical Study of the Phase Reaction TbO_{1.5+x} + (3/28 - x/2)O₂ → (1/7)Tb₇O₁₂," H. Inaba, A. Navrotsky, and L. Eyring, *J. Solid State Chem.*, **37**, 77-84 (1981).
- "Cesium Chloride Versus Nickel Arsenide as Possible Structures for (Me,Fe)O in the Lower Mantle," A. Navrotsky and P. K. Davies, *J. Geophys. Res.*, **86**, 3689-3694 (1981).
- "Thermodynamics of Solid Solution Formation in NiO-MgO and NiO-ZnO," P. K. Davies and A. Navrotsky, *J. Solid State Chem.*, **38**, 264-276 (1981).

"Some Thermodynamic Properties of Fluorapatite, Fluorapargasite, and Fluorophlogopite," H. R. Westrich and A. Navrotsky, *Amer. J. Sci.*, 281, 1091-1103 (1981).

"Thermodynamics of Mixing in Silicate Glasses and Melts," A. Navrotsky, in "Thermodynamics of Minerals and Melts," R. C. Newton, A. Navrotsky, and B. J. Wood, Eds., Vol. I of "Advances in Physical Geochemistry," S. K. Saxena, Series Editor, *Springer Verlag, New York*, 189-205 (1981).

"Energetics of Phase Transitions in AX, ABO₃, and AB₂O₄ Compounds," A. Navrotsky in "Structure and Bonding in Crystals," M. O'Keeffe and A. Navrotsky, Eds., Vol. II, *Academic Press, New York*, 71-93 (1981).

"Thermodynamic Parameters of CaMgSi₂O₆-Mg₂Si₂O₆ Pyroxenes Based on Regular Solution and Cooperative Disordering Models by Holland, Navrotsky, and Newton (1979). Reply to Discussion of Lindsley and Davidson (1980)," T. J. B. Holland, A. Navrotsky, and R. C. Newton, *Contr. Mineral. Petrol.*, 75, 305-306.

"Trends and Systematics in Mineral Thermodynamics," A. Navrotsky, *Berichte Bunsengesellschaft Phys. Chem.* 86, 994-1001 (1982).

"Thermodynamics of Plagioclase-Melt Equilibria in the System Albite-Anorthite-Diopside," D. J. Henry, A. Navrotsky, and H. D. Zimmermann, *Geochim. Cosmochim. Acta*, 46, 381-391 (1982).

"Thermodynamics of Solid Solution Formation in Some Binary Oxide Systems with the Rocksalt Structure," P. K. Davies and A. Navrotsky, in "Proceedings of Symposium on High Temperature Materials Chemistry," D. B. Cubicciotti and D. L. Hildenbrand, Eds., *The Electrochemical Society, Pennington, NJ*, 82-1, 118-132 (1982).

"Calorimetric Studies of Crystalline and Glassy High Pressure Phases," A. Navrotsky, H. Fukuyama, and P. K. Davies, in "High Pressure Research in Geophysics," S. Akimoto and M. Manghnani, Eds., *Center for Academic Publication, Tokyo, Japan*, 465-477 (1982).

"Calorimetric Evidence for Ideal Mixing of Silicon and Germanium in Glasses and Crystals of Sodium Feldspar Composition," C. Capobianco and A. Navrotsky, *Amer. Miner.*, 67, 718-724 (1982).

"A Raman Spectroscopic Study of Glasses along the Joins Silica-Calcium Aluminate, Silica-Sodium Aluminate and Silica-Potassium Aluminate," P. McMillan, B. Piriou, and A. Navrotsky, *Geochim. Cosmochim. Acta*, 46, 2021-2037 (1982).

"A Thermochemical Study of Glasses and Crystals along the Joins Silica-Calcium Aluminate and Silica-Sodium Aluminate," A. Navrotsky, G. Peraudeau, P. McMillan, and J. P. Coutures, *Geochim. Cosmochim. Acta*, 46, 2039-2047 (1982).

"Some Thermodynamic and Experimental Constraints on the Melting of Albite at Atmospheric and High Pressure," A. Navrotsky, C. Capobianco, and J. Stebbins, *J. Geol.*, 90, 679-698 (1982).

"Etude Thermodynamique de Verres du Systeme Silice-Spinelle (SiO₂-MgAlO₄)," N. d. G. Peraudeau, A. Navrotsky, and J.-P. Coutures, *Comptes Rendus de l'Academie des Sciences (Paris)* (1983). (In French).

"Subliquidus Glass-Glass Immiscibility along the Albite-Diopside Join," D. J. Henry, I. D. R. Mackinnon, I. Chan, and A. Navrotsky, *Geochim. Cosmochim. Acta*, 47, 277-282 (1983).

"Quantitative Correlations of Deviations from Ideality in Binary and Pseudo-Binary Solid Solutions," P. K. Davies and A. Navrotsky, *J. Solid State Chem.*, 46, 1-22 (1983).

"Simple Spinel: Crystallographic Parameters, Cation Radii, Lattice Energies, and Cation Distributions," H. St. C. O'Neill and A. Navrotsky, *Amer. Miner.*, 68, 181-194 (1983).

"Enthalpy Effects Associated with Al/Si Ordering in Anhydrous Mg-Cordierite," M. A. Carpenter, A. Navrotsky, and J. D. C. McConnell, *Geochim. Cosmochim. Acta*, 47, 899-906 (1983).

- "Thermochemical Study of Glasses in the System $\text{CaMgSi}_2\text{O}_6$ - $\text{CaAl}_2\text{SiO}_6$," A. Navrotsky, H. D. Zimmermann, and R. L. Hervig, *Geochim. Cosmochim. Acta*, 47, 1535-1538 (1983).
- "Interaction of Cations in Octahedral and Tetrahedral Sites in Simple Spinel: A Comment," A. Navrotsky, *Phys. Chem. Min.*, 10, 192-193 (1984).
- "The Mg_2SiO_4 Polymorphs (Olivine, Modified Spinel, and Spinel)—Thermodynamic Properties from Oxide Melt Calorimetry, Phase Relations, and Models of Lattice Vibrations," M. Akaogi, N. L. Ross, P. McMillan, and A. Navrotsky, *Amer. Miner.*, 69, 499-512 (1984).
- "Cation Distributions and Thermodynamic Properties of Binary Spinel Solid Solutions," H. St. C. O'Neill and A. Navrotsky, *Amer. Miner.*, 69, 733-753 (1984).
- "Calorimetric Study of the Stability of Spinelloids in the System NiAl_2O_4 - Ni_2SiO_4 ," M. Akaogi and A. Navrotsky, *Phys. Chem. Min.*, 10, 166-172 (1984).
- "Thermochemical Study of Glasses in the System $\text{NaAlSi}_3\text{O}_8$ - KAlSi_3O_8 - Si_4O_8 , and the Join $\text{Na}_{1.6}\text{Al}_{1.6}\text{Si}_{2.4}\text{O}_8$ - $\text{K}_{1.6}\text{Al}_{1.6}\text{Si}_{2.4}\text{O}_8$," R. L. Hervig and A. Navrotsky, *Geochim. Cosmochim. Acta*, 48, 513-522 (1984).
- "The Quartz-Coesite-Stishovite Transformations: New Calorimetric Measurements and Calculation of Phase Diagrams," M. Akaogi and A. Navrotsky, *Phys. Earth Planet. Interiors*, 36, 124-134 (1984).
- "The α , β , γ Phase Relations in Fe_2SiO_4 - Mg_2SiO_4 and Co_2SiO_4 - Mg_2SiO_4 : Calculation from Thermochemical Data and Geophysical Applications," A. Navrotsky and M. Akaogi, *J. Geophys. Res.*, 89, 10135-10140 (1984).
- "Thermochemistry of Charge-Coupled Substitutions in Silicate Glasses: The Systems $\text{M}_1^{n+}/n\text{AlO}_2$ - SiO_2 ($\text{M} = \text{Li}, \text{Na}, \text{K}, \text{Rb}, \text{Cs}, \text{Mg}, \text{Ca}, \text{Sr}, \text{Ba}, \text{Pb}$)," B. N. Roy and A. Navrotsky, *J. Am. Ceram. Soc.*, 67, 606-610 (1984).
- "Thermodynamics and Structural Chemistry of Compounds in the System MgO - TiO_2 ," B. A. Wechsler and A. Navrotsky, *J. Solid State Chem.*, 55, 165-180 (1984).
- "The System AgI - AgBr : Energetic Consequences of Defect Equilibria in Single Phase and Two Phase Regions," A. Khandkar, V. B. Tare, A. Navrotsky, and J. B. Wagner, Jr., *J. Electrochem. Soc.: Solid State Sci. Tech.*, 131, 2683-2687 (1984).
- "A Molecular Orbital Study of Bond Length and Angle Variation in Framework Structures," K. L. Geisinger, G. V. Gibbs, and A. Navrotsky, *Phys. Chem. Min.*, 11, 266-283 (1985).
- "The Tetrahedral Framework in Glasses and Melts – Inferences from Molecular Orbital Calculations and Implications for Structure, Thermodynamics, and Physical Properties," A. Navrotsky, K. L. Geisinger, P. McMillan, and G. V. Gibbs, *Phys. Chem. Min.*, 11, 284-298 (1985).
- "Thermochemistry of Sodium Borosilicate Glasses," R. L. Hervig and A. Navrotsky, *J. Am. Ceram. Soc.*, 68, 314-319 (1985).
- "Enthalpies of Ordering in the Plagioclase Feldspar Solid Solution," M. A. Carpenter, J. D. C. McConnell, and A. Navrotsky, *Geochim. Cosmochim. Acta*, 49, 947-966 (1985).
- "Thermochemistry of Glasses Along Joins of Pyroxene Stoichiometry in the System $\text{Ca}_2\text{Si}_2\text{O}_6$ - $\text{Mg}_2\text{Si}_2\text{O}_6$ - Al_4O_6 ," R. L. Hervig, D. Scott, and A. Navrotsky, *Geochim. Cosmochim. Acta*, 49, 1497-1501 (1985).
- "A Thermochemical Study of the Distribution of Cobalt and Nickel between Diopsidic Pyroxene and Melt," D. P. Wright and A. Navrotsky, *Geochim. Cosmochim. Acta*, 49, 2385-2393 (1985).

- "MgSiO₃ Ilmenite: Calorimetry, Phase Equilibria, and Decomposition at Atmospheric Pressure," E. Ito and A. Navrotsky, *Amer. Miner.*, 70, 1020-1026 (1985).
- "Calorimetric Study of High Pressure Polymorphs of MnSiO₃," M. Akoagi and A. Navrotsky, *Phys. Chem. Min.*, 12, 317-323 (1985).
- "Thermochemical Studies of Silicate, Aluminosilicate, and Borosilicate Glasses," A. Navrotsky, R. L. Hervig, B. N. Roy, and M. Huffman, *High Temp. Sci.* 19, 133-150 (1985).
- "Crystal Chemical Constraints on Thermochemistry of Minerals," A. Navrotsky, in "Microscopic to Macroscopic: Atomic Environments to Mineral Thermodynamics," S. W. Kieffer and A. Navrotsky, Eds., "Reviews in Mineralogy," P. H. Ribbe, Series Ed., *Min. Soc. Amer.* 14, 225-275 (1985).
- "Scientific Perspective," S. W. Kieffer and A. Navrotsky in "Microscopic to Macroscopic - Atomic Environments to Mineral Thermodynamics," S. W. Kieffer and A. Navrotsky, Eds., "Reviews in Mineralogy," P. H. Ribbe, Series Ed., *Min. Soc. Amer.* 14 1-8 (1985).
- "Thermodynamics of Silicate Melts and Glasses," A. Navrotsky, in Silicate Melts, C. M. Scarfe, Ed., *Mineralogical Association of Canada, Short Course Volume* 12, 130-153 (1986).
- "Energetics and Variations in Structure in Framework Aluminosilicate Glasses, Melts, and Crystals," A. Navrotsky, in "Dynamic Aspects of Structural Change in Liquids and Crystals," C. A. Angell and M. Goldstein, Eds., *Annals N.Y. Acad. Sci.*, 484, 318-320 (1986).
- "Phase Transitions among the CaGeO₃ Polymorphs (Wollastonite, Garnet, and Perovskite Structures): Studies by High Pressure Synthesis, High Temperature Calorimetry, and Vibrational Spectroscopy and Calculation," N. L. Ross, A. Akoagi, A. Navrotsky, J. Susaki, and P. McMillan, *J. Geophys. Res.*, (Jamieson Memorial Volume), 91, 4685-4696 (1986).
- "Thermochemistry of MgAl₂O₄-Al_{8/3}O₄ Defect Spinels," A. Navrotsky, B. A. Wechsler, K. Geisinger, and F. Seifert, *J. Am. Ceram. Soc.*, 69, 418-422 (1986).
- "Thermochemistry of the Tremolite-Edenite Amphiboles Using Fluorine Analogues, and Applications to Amphibole-Plagioclase-Quartz Equilibria," C. M. Graham and A. Navrotsky, *Contrib. Mineral. Petrol.*, 93, 18-32 (1986).
- "Thermochemical and Spectroscopic Studies of Chemically Vapor Deposited Amorphous Silica," M. Huffman, A. Navrotsky, and F. Pintchovski, *J. Electrochem. Soc.*, 133, 164-171 (1986).
- "Thermochemistry and Structure of Low Pressure Chemically Vapor Deposited and Bulk SiO₂-P₂O₅ and SiO₂-GeO₂ Glasses," M. Huffman, A. Navrotsky, and F. Pintchovski, *J. Electrochem. Soc.*, 133, 431-439 (1986).
- "Cation Distribution Energetics and Heats of Mixing in MgFe₂O₄-MgAl₂O₄, ZnFe₂O₄-ZnAl₂O₄ and NiAl₂O₄-ZnAl₂O₄ Spinels: Study by High Temperature Calorimetry," A. Navrotsky, *Amer. Miner.*, 71, 1160-1169 (1986).
- "Thermodynamics of Solid Solution Formation in NiO-CuO," J. Bularzik, P. K. Davies, and A. Navrotsky, *J. Am. Ceram. Soc.*, 69, 453-457 (1986).
- "Calorimetric Study of High Pressure Polymorphs of Li₂WO₄ and Li₂MoO₄," E. Takayama-Muromachi, A. Navrotsky, and S. Yamaoka, *J. Solid State Chem.*, 65, 241-250 (1986).
- "Enthalpy of Diaplectic Labradorite Glass," K. L. Geisinger, A. Navrotsky, and J. Arndt, *Phys. Chem. Min.*, 13, 357-359 (1986).

- "Direct Measurement of the Enthalpy of Fusion of Diopside," D. Ziegler and A. Navrotsky, *Geochim. Cosmochim. Acta*, 50, 2461-2466 (1986).
- "Mixing Properties of NaAlSi₃O₈ Melt-H₂O: New Calorimetric Data and Some Geological Implications," J. D. Clemens and A. Navrotsky, *J. Geol.*, 95, 173-186 (1987).
- "Diffraction Studies of a Highly Metastable Form of Amorphous Silica," S. Konnert, P. D'Antonio, M. Huffman, and A. Navrotsky, *J. Am. Ceram. Soc.*, 70, 192-196 (1987).
- "Solid Solution Thermodynamics in CaCO₃-MnCO₃," C. Capobianco and A. Navrotsky, *Amer. Miner.*, 72, 312-318 (1987).
- "Pyroxene-Garnet Transformation: Thermochemistry and Elasticity of Garnet Solid Solutions, and Application to a Pyrolite Mantle," M. Akaogi, A. Navrotsky, T. Yagi, and S. Akimoto, in "High Pressure Research in Mineral Physics," M. Manghnani and Y. Syono, Eds., *Terra Publications, Tokyo, Japan*, 251-260 (1987).
- "Structural Environment of Al Dissolved in 2PbO•B₂O₃ Glasses Used for Solution Calorimetry: An ²⁷Al NMR Study," R. Oestrike, A. Navrotsky, G. L. Turner, B. Montez, and R. J. Kirkpatrick, *Amer. Miner.*, 72, 788-791 (1987).
- "Calorimetric Study of High Pressure Phase Transitions among the CdGeO₃ Polymorphs (Pyroxenoid, Garnet, Ilmenite, and Perovskite Structures)," M. Akaogi and A. Navrotsky, *Phys. Chem. Min.*, 14, 435-440 (1987).
- "Enthalpies of Formation of Dolomite and of Magnesian Calcites," A. Navrotsky and C. Capobianco, *Amer. Miner.*, 72, 782-787 (1987).
- "Structural and Calorimetric Studies of Order-Disorder in CdMg(CO₃)₂," C. Capobianco, B. P. Burton, P. M. Davidson, and A. Navrotsky, *J. Solid State Chem.*, 71, 214-223 (1987).
- "K₂Si₄O₉: Energetics and Vibrational Spectra of Glass, Sheet Silicate, and Wadeite-type Phases," K. L. Geisinger, N. L. Ross, P. McMillan, and A. Navrotsky, *Amer. Miner.*, 72, 984-994 (1987).
- "The Mg₂GeO₄ Olivine-Spinel Phase Transition," N. L. Ross and A. Navrotsky, *Phys. Chem. Min.*, 14, 473-481 (1987).
- "High-Resolution ²³Na, ²⁷Al, and ²⁹Si NMR Spectroscopy of Framework Aluminosilicate Glasses," R. Oestrike, W. Yang, R. J. Kirkpatrick, R. L. Hervig, A. Navrotsky, and B. Montez, *Geochim. Cosmochim. Acta*, 51, 2199-2209 (1987).
- "Phlogopite: High Temperature Solution Calorimetry, Thermodynamic Properties, Al-Si and Stacking Disorder, and Phase Equilibria," J. D. Clemens, S. Circone, A. Navrotsky, P. F. McMillan, B. K. Smith, and J. V. Wall, *Geochim. Cosmochim. Acta*, 51, 2569-2578 (1987).
- "Energetics of Metastable Forms of Amorphous Silica," A. Navrotsky, *Diffusion and Defect Data*, 53-54, 61-66 (1987).
- "Calorimetric Studies of Melts, Crystals, and Glasses, Especially in Hydrous Systems," A. Navrotsky, in "Magmatic Processes: Physicochemical Principles," B. O. Mysen, Ed., *Geochemical Society Spec. Publ.* No. 1, 411-422 (1987).
- "Thermodynamic Aspects of Inorganic Solid State Chemistry," A. Navrotsky, in "Solid State Chemistry," P. Day and A. Cheetham, Eds., *Oxford Univ. Press*, 362-393 (1987).

- "Silicate and Germanate Garnets, Ilmenites, and Perovskites: Thermochemistry, Lattice Vibrations, and Spectroscopy," A. Navrotsky, in "High Pressure Research in Mineral Physics," M. Manghnani and Y. Syono, Eds., *Terra Publications, Tokyo, Japan*, 261-268 (1987).
- "High Pressure Transitions in Silicates," A. Navrotsky, *Prog. Solid State Chem.* **17**, 53-86 (1987).
- "Energetics of Complex Aluminosilicates," A. Navrotsky, in "Physics and Chemistry of Porous Media, II," J. R. Banaver, J. Koplik, and K. W. Winkler, Eds., *Am. Inst. Phys. Conf. Proc.*, **154**, 180-194 (1987).
- "Models of Crystalline Solutions," A. Navrotsky, in "Thermodynamic Modelling of Geologic Systems: Minerals, Fluids, and Melts, H. P. Eugster and I. S. E. Carmichael, Eds., "Reviews in Mineralogy," P. H. Ribbe, Series Ed., *Min. Soc. Amer.* **17**, 35-69 (1987).
- "Energetics of Compounds ($A^{3+}B^{4+}O_3$) with the Perovskite Structure," E. Takayama-Muromachi and A. Navrotsky, *J. Solid State Chem.*, **72**, 244-256 (1988).
- "Energetics of Brannerite-type Solid Solutions: the Systems ZnV_2O_6 - $LiMoVO_6$ and MgV_2O_6 - $LiMoVO_6$," K. Mocala and A. Navrotsky, *J. Solid State Chem.*, **73**, 224-234 (1988).
- "Thermochemistry and Structure of Glasses along the Join $NaAlSi_3O_8$ - $NaBSi_3O_8$," K. L. Geisinger, R. Oestrike, A. Navrotsky, G. L. Turner, and R. J. Kirkpatrick, *Geochim. Cosmochim. Acta*, **52**, 2405-2414 (1988).
- "A Transferable Interatomic Potential for Crystalline Phases in the System MgO - SiO_2 ," K. Leinenweber and A. Navrotsky, *Phys. Chem. Min.*, **15**, 588-596 (1988).
- " $MgSiO_3$ Ilmenite: Heat Capacity, Thermal Expansivity, and Enthalpy of Transformation," T. Ashida, S. Kume, E. Ito, and A. Navrotsky, *Phys. Chem. Min.*, **16**, 239-245 (1988).
- "Study of the $MgGeO_3$ Polymorphs (Orthopyroxene, Clinopyroxene, and Ilmenite Structures) by Calorimetry, Spectroscopy, and Phase Equilibria," N. L. Ross and A. Navrotsky, *Amer. Miner.*, **73**, 1355-1365 (1988).
- "Energetics, Composition and Structure of Alkoxide-Derived Silica Gels," P. Maniar, A. Navrotsky, E. M. Rabinovich, D. L. Wood, and N. A. Kopylov, in "Better Ceramics through Chemistry, III," C. J. Brinker, D. E. Clarke, and D. R. Ulrich, Eds., *Mat. Res. Soc. Symp. Proc.*, **121**, 323-329 (1988).
- "Experimental Studies of Mineral Energetics," A. Navrotsky, in "Physical Properties and Thermodynamic Behaviour of Minerals," E. Salje, Ed., *D. Reidel Pub. Co., Dordrecht, Holland*, 403-432 (1988).
- "Structural and Thermodynamic Variation in Nickel Aluminate Spinel," K. Mocala and A. Navrotsky, *J. Am. Ceram. Soc.*, **12**, 826-832 (1989).
- "Calorimetry of Silicate Melts at 1773 K: Measurement of Enthalpies of Fusion and Mixing in the Systems Diopside-Anorthite-Albite and Anorthite-Forsterite," A. Navrotsky, D. Ziegler, R. Oestrike, and P. Maniar, *Contrib. Mineral. Petrol.*, **101**, 122-130 (1989).
- "High Temperature Enthalpy at the Orientational Order-Disorder Transition in Calcite: Implications for the Calcite/Aragonite Phase Equilibrium," S. A. T. Redfern, E. Salje, and A. Navrotsky, *Contrib. Mineral. Petrol.*, **101**, 479-484 (1989).
- "Structural, Thermodynamic, and Kinetic Aspects of Disordering in the Pseudobrookite-type Compound, Karrooite, $MgTi_2O_5$," N. E. Brown and A. Navrotsky, *Amer. Miner.*, **74**, 902-912 (1989).
- "Energetics of Brannerite-type Solid Solutions: the System MnV_2O_6 - $LiMoVO_6$ - Mo_2O_6 ," K. Mocala and A. Navrotsky, *J. Solid State Chem.*, **80**, 45-55 (1989).

- "Thermochemistry of Phases in the System $\text{MgGa}_2\text{O}_4\text{-Mg}_2\text{GeO}_4$," K. Leinenweber and A. Navrotsky, *Phys. Chem. Min.*, 16, 497-502 (1989).
- "Direct Calorimetric Determination of Energetics of Oxygen in $\text{YBa}_2\text{Cu}_3\text{O}_x$," M. E. Parks, A. Navrotsky, K. Mocala, E. Takayama-Muromachi, A. Jacobson, and P. K. Davies, *J. Solid State Chem.*, 79, 53-62 (1989).
- "Direct Calorimetric Determination Energetics of Oxygen in $\text{YBa}_2\text{Cu}_3\text{O}_x$ [ERRATA]," M. E. Parks, A. Navrotsky, K. Mocala, E. Takayama-Muromachi, A. Jacobson, and P. K. Davies, *J. Solid State Chem., Erratum* 83, 218-219 (1989).
- "Phase Equilibrium and Calorimetric Study of the Transition of MnTiO_3 from the Ilmenite to the Lithium Niobate Structure and Implications for the Stability Field of Perovskite," J. Ko, N. E. Brown, A. Navrotsky, C. T. Prewitt, and T. Gasparik, *Phys. Chem. Min.*, 16, 727-733 (1989).
- "Olivine-Modified Spinel-Spinel Transitions in the System $\text{Mg}_2\text{SiO}_4\text{-Fe}_2\text{SiO}_4$: Calorimetric Measurements, Thermochemical Calculations, and Geophysical Application," M. Akaogi, E. Ito, and A. Navrotsky, *J. Geophys. Res.*, 94, 15671-15685 (1989).
- "Transition Enthalpies and Entropies of High Pressure Zinc Metasilicates and Zinc Metagermanates," K. Leinenweber, A. Navrotsky, P.F. McMillan, and E. Ito, *Phys. Chem. Min.*, 16, 799-808 (1989).
- "Thermochemistry of Perovskites," A. Navrotsky, in "Perovskite - A Structure of Great Interest to Geophysics and Materials Science," A. Navrotsky and D. J. Weidner, Eds., *Amer. Geophys. Union*, 67-80 (1989).
- "Silicates and Germanates at High Pressure," A. Navrotsky, in "Reactivity of Solids," M. S. Whittingham, S. Bernasek, A. J. Jacobson, and A. Navrotsky, Eds., *Solid State Ionics, North Holland, Amsterdam*, 32/33, 288-297 (1989).
- "High Pressure Polymorphs in Ceramics and Minerals: GeO_2 and ZrO_2 ," S. Kume, O. Ohtaka, T. Yamanaka, and A. Navrotsky, in "Reactivity of Solids," M. S. Whittingham, S. Bernasek, A. J. Jacobson, and A. Navrotsky, Eds., *Solid State Ionics, North Holland, Amsterdam*, 32/33, 285-287 (1989).
- "Energetics of Glasses in the System Diopside-Anorthite-Forsterite," A. Navrotsky, P. Maniar, and R. Oestrike, *Contrib. Miner. Petrol.*, 105, 81-86 (1990).
- "Internally Consistent Thermodynamic Data and Equilibrium Phase Relations for Compounds in the System MgO-SiO_2 at High Pressure and High Temperature," Y. Fei, S. K. Saxena, and A. Navrotsky, *J. Geophys. Res.*, 95, 6915-6928 (1990).
- "Energetics of High Surface Area Silicas," P. D. Maniar and A. Navrotsky, *J. Non-Cryst. Solids*, 120, 20-25 (1990).
- "Energetics of the Charge-Coupled Substitution $\text{Si}^{4+} \rightarrow \text{Na}^+ + \text{T}^{3+}$ in the Glasses $\text{NaTO}_2\text{-SiO}_2$ (T=Al, Fe, Ga, B)," J. J. DeYoreo, A. Navrotsky, and D. B. Dingwell, *J. Am. Ceram. Soc.*, 73, 2068-2072 (1990).
- "Thermochemistry and Structure of Model Waste Glass Compositions," A. J. G. Ellison and A. Navrotsky, in "Scientific Basis for Nuclear Waste Management XIII," V. M. Oversby and P. W. Brown, Eds., *Mat. Res. Soc. Symp. Proc.*, 176, 193-207 (1990).
- "A Thermochemical Investigation of the La-Sr-Cu-O System," J. Bularzik, A. Navrotsky, B. Scott, J. Bringley, and S. Trail, *Mat. Res. Soc. Symp. Proc.*, 169, 61-64 (1990).
- "Thermochemistry of the Amorphous System $\text{SiO}_2\text{-GeO}_2$: Comparison of Flame Hydrolysis Materials to High Temperature Fused Glasses," P. D. Maniar, A. Navrotsky, and C. W. Draper, *Mat. Res. Soc. Symp. Proc.*, 172, 15-20 (1990).

"Energetics and Structure of Sol-Gel Silicas," P. D. Maniar, A. Navrotsky, E. M. Rabinovich, J. Y. Ying, and J. B. Benziger, *J. Non-Cryst. Solids*, 124, 101-111 (1990).

"Negative Pressure-Temperature Slopes for Reactions Forming MgSiO₃ Perovskite from Calorimetry," E. Ito, M. Akaogi, L. Topor, and A. Navrotsky, *Science*, 249, 1275-1278 (1990).

"Calorimetry of Phase Transitions and Melting in Silicates," A. Navrotsky, *Thermochim. Acta*, 163, 13-24 (1990).

"Scanning Calorimetric Measurement of Heat Capacity During Incongruent Melting of Diopside," R. A. Lange, J. J. DeYoreo, and A. Navrotsky, *Amer. Miner.*, 76, 904-912 (1991).

"Energetics of La_{2-x}Sr_xCuO_{4-y} Solid Solutions (0.0 ≤ x ≤ 1.0)," J. Bularzik, A. Navrotsky, J. DiCarlo, J. Bringley, B. Scott, and S. Trail, *J. Solid State Chem.*, 93, 418-429 (1991).

"Substitution of ^{6,4}Al in Phlogopite: Mica Characterization, Unit-Cell Variation, ²⁷Al and ²⁹Si MAS-NMR Spectroscopy, and Al-Si Distribution in the Tetrahedral Sheet," S. Circone, A. Navrotsky, R. J. Kirkpatrick, and C. M. Graham, *Amer. Miner.*, 76, 1485-1501 (1991).

"XAS Study of Lanthanum Coordination Environments in Glasses of the System K₂O-SiO₂-La₂O₃," E. M. Larson, A. J. G. Ellison, F. W. Lytle, A. Navrotsky, R. B. Gregor, and J. Wong, *J. Non-Cryst. Solids*, 130, 260-272 (1991).

"Stoichiometry and Local Atomic Arrangements in Crystals," A. J. G. Ellison and A. Navrotsky, *J. Solid State Chem.*, 94, 130-148 (1991).

"MAS NMR Spectroscopic Study of Mg²⁹SiO₃ with the Perovskite Structure," R. J. Kirkpatrick, D. Howell, B. L. Phillips, X. Cong, E. Ito, and A. Navrotsky, *Amer. Miner.*, 76, 673-676 (1991).

"Stability of Monoclinic and Orthorhombic Zirconia: Studies by High-Pressure Phase Equilibria and Calorimetry," O. Ohtaka, T. Yamanaka, S. Kume, E. Ito, and A. Navrotsky, *J. Am. Ceram. Soc.*, 74, 505-509 (1991).

"Phase Transition in CaGeO₃ Perovskite: Evidence from X-ray Powder Diffraction, Thermal Expansion and Heat Capacity," X. Liu, Y. Wang, R. C. Liebermann, P. D. Maniar, and A. Navrotsky, *Phys. Chem. Min.*, 18, 224-230 (1991).

"Calorimetric Studies of Ceramics," A. Navrotsky, in "International Conference on the Chemistry of Electronic Ceramic Materials, Jackson, WY, August 17-22, 1990," National Institute of Standards and Technology, SP 804, 379-391 (1991).

"A Thermochemical Study of La_{2-x}A_xCuO_{4-y} (A = Ba, Sr, Ca, Pb)," J. DiCarlo, J. Bularzik, and A. Navrotsky, *J. Solid State Chem.*, 96, 381-389 (1992).

"The Enthalpy of Formation of Zircon," A. J. G. Ellison and A. Navrotsky, *J. Am. Ceram. Soc.*, 75, 1430-1433 (1992).

"Heat Capacities of Fe₂O₃-Bearing Silicate Liquids," R. Lange and A. Navrotsky, *Contrib. Mineral. Petrol.*, 110, 311-320 (1992).

"High-Temperature Heat Capacity of Co₃O₄ Spinel: Thermally Induced Spin Unpairing Transition," K. Mocala, A. Navrotsky, and D. M. Sherman, *Phys. Chem. Min.*, 19, 88-95 (1992).

"The Molar Enthalpy of Dehydration of Cordierite," J. W. Carey, and A. Navrotsky, *Amer. Miner.*, 77, 930-936 (1992).

- "Substitution of ^[6-4]Al in Phlogopite: High Temperature Solution Calorimetry, Heat Capacities and Thermodynamic Properties of the Phlogopite-Eastonite Join," S. Circone and A. Navrotsky, *Amer. Miner.*, 77, 1191-1205 (1992).
- "Unmixing of Hot Inorganic Melts," A. Navrotsky, *Nature*, 360, 306 (1992).
- "Nature of Hole States in Cuprate Superconductors," A. Mehta, J. DiCarlo, and A. Navrotsky, *J. Solid State Chem.*, 101, 173-185 (1992).
- "Thermochemistry of the Y₂O₃-BaO-Cu-O System," Z. Zhou and A. Navrotsky, *J. Mater. Res.*, 7, 2920-2935 (1992).
- "Earth Materials," R. C. Ewing and A. Navrotsky, Eds., *Mater. Res. Soc. Bull.*, 17, 19-20 (1992).
- "Materials Science of the Earth's Deep Interior," A. Navrotsky, D. J. Weidner, R. C. Liebermann, and C. T. Prewitt, *Mater. Res. Soc. Bull.*, 17, 30-37 (1992).
- "Advances in Calorimetric Techniques for High Pressure Phases," L. Topor and A. Navrotsky, in "High Pressure Research: Application to Earth and Planetary Sciences," Y. Syono and M. Manghnani, Eds., *Tena Publishing Co., Tokyo, Japan, and Amer. Geophys. Union, Washington, D.C.*, 71-76 (1992).
- "Structural Transitions in LiNbO₃ and NaNbO₃," A. Mehta, A. Navrotsky, N. Kumada, and N. Kinomura, *J. Solid State Chem.*, 102, 213-225 (1993).
- "The Effect of Fe on the Crystal Structure of Wadsleyite β-(Mg_{1-x}Fe_x)₂SiO₄, 0.00 ≤ x ≤ 0.40," L. W. Finger, R. M. Hazen, J. Zhang, J. Ko, and A. Navrotsky, *Phys. Chem. Min.*, 19, 361-368 (1993).
- "The Energetics of La_{2-x}A_xNiO_{4-y} (A = Ba, Sr)," J. DiCarlo, A. Mehta, D. Banschick, and A. Navrotsky, *J. Solid State Chem.*, 103, 186-192 (1993).
- "Tremolite-Richterite Amphiboles: Synthesis, Compositional and Structural Characterization, and Thermochemistry," A. R. Pawley, C. M. Graham, and A. Navrotsky, *Amer. Miner.*, 78, 23-35 (1993).
- "High Temperature X-ray Diffraction: Solutions to Uncertainties in Temperature and Sample Position," N. E. Brown, S. M. Swapp, C. L. Bennett, and A. Navrotsky, *J. Appl. Cryst.*, 26, 77-81 (1993).
- "Thermochemistry of Carbonate-Pyroxene Equilibria," L. Chai and A. Navrotsky, *Contrib. Mineral. Petrol.*, 114, 139-147 (1993).
- "Energetics of T, T' and T* Phases in Some Rare Earth Cuprates," K. Mocala, A. Navrotsky, J. F. Bringley, B. A. Scott, M. Frisch, and T. Shaw, *J. Solid State Chem.*, 104, 181-192 (1993).
- "Nonstoichiometry of Magnetite-Ulvospinel Solid Solutions Quenched from 1300 °C," E. Senderov, A. U. Dogan, and A. Navrotsky, *Amer. Miner.*, 78, 565-573 (1993).
- "Energetics of the Oxygen Vacancy Order-Disorder Transition in Ba₂In₂O₅," T. R. S. Prasanna and A. Navrotsky, *J. Mater. Res.*, 8, 1484-1486 (1993).
- "Heat Capacities of TiO₂-Bearing Silicate Liquids: Evidence for Anomalous Changes in Configurational Entropy with Temperature," R. A. Lange and A. Navrotsky, *Geochim. Cosmochim. Acta*, 57, 3001-3011 (1993).
- "Hematite-Ilmenite (Fe₂O₃-FeTiO₃) Solid Solutions: Determinations of Fe-Ti Order from Magnetic Properties," N. E. Brown, A. Navrotsky, G. L. Nord, Jr., and S. K. Banerjee, *Amer. Miner.*, 78, 941-951 (1993).

- "Structural Evolution of Colloidal Silica Gels to Glass," J. Y. Ying, J. B. Benziger, and A. Navrotsky, *J. Am. Ceram. Soc.*, 76, 2561-2570 (1993).
- "Energetics of Cobalt II Oxide with the Zinc-blende Structure," J. DiCarlo and A. Navrotsky, *J. Am. Ceram. Soc.*, 76, 2465-2467 (1993).
- "Structural Evolution of Alkoxide Silica Gels to Glass: Effect of Catalyst pH," J. Y. Ying, J. B. Benziger, and A. Navrotsky, *J. Am. Ceram. Soc.*, 76, 2571-2582 (1993).
- "Oxidation States of Copper in Lead Borate Glass," Z. Zhou, A. Navrotsky, and D. S. McClure, *Phys. and Chem. of Glasses*, 34, 251-254 (1993).
- "Thermochemical Study of Ln_2O_3 , $\text{T}'\text{-Ln}_2\text{CuO}_4$ and $\text{Ln}_2\text{Cu}_2\text{O}_5$ (Ln = Rare Earth)," E. Takayama-Muromachi and A. Navrotsky, *J. Solid State Chem.*, 106, 349-356 (1993).
- "Thermodynamics of Ternary Nitride Formation by Ammonolysis: Application to LiMoN_2 , Na_3WN_3 , and $\text{Na}_3\text{WO}_3\text{N}$," S. H. Elder, F. J. DiSalvo, L. Topor, and A. Navrotsky, *Chem. Mater.*, 5, 1545-1553 (1993).
- "Thermochemical Study of the Stability of Frameworks in High Silica Zeolites," I. Petrovic, A. Navrotsky, M. E. Davis, and S. I. Zones, *Chem. Mater.*, 5, 1805-1813 (1993).
- "Thermodynamic Stability Field of the 123 and 124 Phases in the Y_2O_3 -BaO-Cu-O System," Z. Zhou and A. Navrotsky, *J. Mater. Res.*, 8, 3023-3031 (1993).
- "Superconducting, Structural and Thermochemical Properties of $\text{La}_2\text{CuO}_{4+\delta}$ Prepared by KMnO_4 Oxidation," E. Takayama-Muromachi and A. Navrotsky, *Physica C*, 218, 164-174 (1993).
- "Differential Scanning Calorimetry in a Piston-Cylinder Apparatus: Design and Calibration," R. P. Rapp and A. Navrotsky, *Pure Appl. Geophys.*, 141, 615-629 (1993).
- "Structure and Energetics of Vitreous and Crystalline Tectosilicates," A. Navrotsky, *Trans. Am. Cryst. Assoc.*, 27, 1-12 (1993).
- "How Much Do We Know About Mantle Thermochemistry?," A. Navrotsky, *Science*, 261, 168-169 (1993).
- "Structural Investigation and Energetics of Mullite Formation From Sol-Gel Precursors," C. Gerardin, S. Sundaresan, J. Benziger, and A. Navrotsky, *Chem. Mater.*, 6, 160-170 (1994).
- " $\text{La}_2\text{CuO}_{4+\delta}$: Synthesis Under High Oxygen Pressure and Study of Phase Relations and Energetics," R. P. Rapp, A. Mehta, J. DiCarlo, and A. Navrotsky, *J. Mater. Res.*, 9, 8-12 (1994).
- "Preparation and Thermochemical Properties of BaNiO_{2+x} ," J. DiCarlo, I. Yazdi, A. J. Jacobson, and A. Navrotsky, *J. Solid State Chem.*, 109, 223-226 (1994).
- "Luminescence of the Ilmenite Phase of LiNbO_3 ," M. Wiegel, G. Blasse, A. Navrotsky, and A. Mehta, *J. Solid State Chem.*, 110, 413-415 (1994).
- "Synthesis of Mesoscopic Structures by Co-Assembly," M. D. McGehee, S. M. Gruner, N. Yao, C. M. Chun, A. Navrotsky, and I. A. Aksay, in "Proc. 52nd Annual Meeting of the Microscopy Society of America, held jointly with the 29th Annual Meeting of the Microbeam Analysis Society," G.W. Bailey and A.J. Garratt-Reed, Eds., *San Francisco Press, Inc., San Francisco*, 448-449 (1994).
- "Energetics and Structural Changes Associated with Phase Separation and Crystallization in Lithium Silicate Glasses," S. Sen, C. Gerardin, A. Navrotsky, and J. E. Dickinson, *J. Non-Cryst. Solids*, 168, 64-75 (1994).
- "Hematite-Ilmenite (Fe_2O_3 - FeTiO_3) Solid Solutions: The Effects of Cation Ordering on the Thermodynamics of Mixing," N. E. Brown and A. Navrotsky, *Amer. Miner.*, 79, 485-496 (1994).

- "Energetics of Radiation Damage in Natural Zircon ($ZrSiO_4$)," S. Ellsworth, A. Navrotsky, and R. C. Ewing, *Phys. Chem. Min.*, 21, 140-149 (1994).
- "Calorimetric Study of High Pressure Polymorphism in $FeTiO_3$: Stability of the Perovskite Phase," A. Mehta, K. Leinenweber, and A. Navrotsky, *Phys. Chem. Min.*, 21, 207-212 (1994).
- "Direct Calorimetric Measurement of Enthalpies in Diopside-Anorthite-Wollastonite Melts at 1773 K," I. Tarina, A. Navrotsky, and H. Gan, *Geochim. Cosmochim. Acta*, 58, 3665-3673 (1994).
- "Energetics of $La_{2-x}Sr_xCoO_{4-y}$ ($0.5 < x < 1.5$)," T. R. S. Prasanna and A. Navrotsky, *J. Solid State Chem.*, 112, 192-195 (1994).
- "Energetics in the Brownmillerite-Perovskite Pseudo-Binary $Ca_2Fe_2O_5$ - $CaTiO_3$," T. R. S. Prasanna and A. Navrotsky, *J. Mater. Res.*, 9, 3121-3124 (1994).
- "Enthalpy of Formation of Siderite and its Application in Phase Equilibrium Calculation," L. Chai and A. Navrotsky, *Amer. Miner.*, 79, 921-929 (1994).
- "The Behavior of H_2O and CO_2 in High-Temperature Lead Borate Solution Calorimetry of Volatile-Bearing Phases," A. Navrotsky, R. P. Rapp, E. Smelik, P. Burnley, S. Circone, L. Chai, K. Bose, and H. R. Westrich, *Amer. Miner.*, 79, 1099-1109 (1994).
- "A Calorimetric Study of Synthetic Amphiboles Along the Tremolite-Tschermakite Join and the Heats of Formation of Magnesiohornblende and Tschermakite," E. A. Smelik, D. M. Jenkins, and A. Navrotsky, *Amer. Miner.*, 79, 1110-1122 (1994).
- "Nanoscale Encapsulation of Fe Crystallites Within a Protective Graphite Cage," N. Yao, A. Navrotsky, and K. Leinenweber, in "Proc. 52nd Annual Meeting of the Microscopy Society of America, held jointly with the 29th Annual Meeting of the Microbeam Analysis Society," G. W. Bailey and A. J. Garratt-Reed, Eds., *San Francisco Press, Inc., San Francisco*, 982-983 (1994).
- "Direct Measurements of Latent Heat During Crystallization and Melting of an Ugandite and an Olivine Basalt," R. A. Lange, K. V. Cashman, and A. Navrotsky, *Contrib. Mineral. Petrol.*, 118, 169-181 (1994).
- "High Temperature Calorimetry of MCM-41," I. Petrovic, A. Navrotsky, C.-Y. Chen, and M. E. Davis, in "Zeolites and Related Microporous Materials: State of the Art 1994," J. Weitkamp, H. G. Karge, H. Pfeifer, and W. Holderich, Eds., *Elsevier, New York*, 677-684 (1994).
- "Thermochemistry of Crystalline and Amorphous Silica," A. Navrotsky, *Reviews in Mineralogy*, 29(SILICA), 309-329 (1994).
- "Mineral Physics," A. Navrotsky, *Geotimes*, 39, 27-28 (1994).
- "Repeating Patterns in Mineral Energetics," A. Navrotsky, MSA Presidential Address, *Amer. Miner.* 79, 589-605 (1994).
- "Physics and Chemistry of Earth Materials," A. Navrotsky, part of "Cambridge Topics in Mineral Physics and Chemistry (Book 6)" *Cambridge University Press 6th Edition*, 432 pages, (1994).
- "Thermochemistry of Perovskite-Related Oxides with High Oxidation States: Superconductors, Sensors, Fuel Cell Materials," A. Navrotsky, *Pure Appl. Chem.*, 66, 1759-1764 (1994).
- "Thermochemistry of Crystalline and Amorphous Silica," A. Navrotsky, *Rev. Mineral.* 29, 309-329 (1994).
- "High Temperature Calorimetric Study of Mixing, Phase, Separation, and Crystallization in Silicate Glasses," A. Navrotsky, *Mater. Res. Soc. Symp. Proc.*, 321, 3-11 (1994).

- "Structure of the Defect Perovskite [Pb_{0.85}La_{0.10}]TiO₃ Between 10 and 1023 K," G.A. Rossetti, Jr., M. A. Rodriguez, A. Navrotsky, L. E. Cross, and R. E. Newnham, *J. Appl. Phys.*, 77, 1683-1689 (1995).
- "Energy Associated with Dislocations: A Calorimetric Study Using Synthetic Quartz," M. Liu, R. A. Yund, J. Tullis, L. Topor, and A. Navrotsky, *Phys. Chem. Min.*, 22, 67-73 (1995).
- "Little Energetic Limitation to Microporous and Mesoporous Materials," A. Navrotsky, I. Petrovic, Y. Hu, C.-Y. Chen, and M. E. Davis, *Microporous Mater.*, 4, 95-98 (1995).
- "Energetics of Calcium-Rich Dolomite," L. Chai, A. Navrotsky, and R. J. Reeder, *Geochim. et Cosmochim. Acta*, 59, 939-944 (1995).
- "Enthalpies of Mixing for Disordered Alkali Feldspars at High Temperature: A Test of Regular Solution Thermodynamic Models and a Comparison of Hydrofluoric Acid and Lead Borate Solution Calorimetric Techniques," G. L. Hovis and A. Navrotsky, *Amer. Miner.*, 80, 280-284 (1995).
- "High-Pressure Perovskites on the Join CaTiO₃-FeTiO₃," K. Leinenweber, J. Linton, A. Navrotsky, Y. Fei, and J. Parise, *Phys. Chem. Min.*, 22, 251-258 (1995).
- "Thermodynamic Stability of Hydrous Silicates: Some Observations and Implications for Water in the Earth, Venus and Mars," A. Navrotsky and K. Bose, in "Volatiles in the Earth and Solar System," K. A. Farley, Ed., *Amer. Inst. Phys. Conf. Proc.*, 341, 221-228 (1995).
- "Standard Enthalpy of Formation of Lanthanum Zirconate," M. Bolech, E. H. P. Cordfunke, F. J. J. G. Janssen, and A. Navrotsky, *J. Am. Ceram. Soc.*, 78, 2257-2258 (1995).
- "X-ray Powder Diffraction Data for Ba₂Cu₃PrO_{6.96±0.01}," V. E. Lamberti, M. A. Rodriguez, and A. Navrotsky, *Powder Diffr.*, 10, 207-209 (1995).
- "Thermochemical Study of the Relative Stability of Dense and Microporous Aluminophosphate Frameworks," Y. Hu, A. Navrotsky, C.-Y. Chen, and M. E. Davis, *Chem. Mater.*, 7, 1816-1823 (1995).
- "Structure and Symmetry of CaFeTi₂O₆ Perovskite," N. Yao, A. Navrotsky, and K. Leinenweber, in "Proc. Microscopy and Microanalysis," G. W. Bailey, M. H. Ellisman, R. A. Hennigar, and N. J. Zaluzec, Eds., *Jones and Begell Publishing, New York*, 364-365 (1995).
- "Energetics of Microporous Materials," A. Navrotsky, I. Petrovic, Y. Hu, C.-Y. Chen, and M. E. Davis, *J. Non-Cryst. Solids*, 192/193, 474-477 (1995).
- "Scanning Calorimetric Determinations of the Heat Contents of Diopside-Rich Systems During Melting and Crystallization," J. J. DeYoreo, R. A. Lange, and A. Navrotsky, *Geochim. Cosmochim. Acta*, 59, 2701-2707 (1995).
- "Mineral Physics," A. Navrotsky, *Geotimes* 2, 41-42 (1995).
- "Thermodynamic Properties of Minerals," A. Navrotsky, in "Mineral Physics & Crystallography: Handbook of Physical Constants," T. J. Ahrens, Ed., *Amer. Geophys. Union*, 18-28 (1995).
- "Creating the Next Generation of Reference Earth Models," A. Navrotsky, B. Romanowicz, M. Richards, and D. J. Weidner, Eds, in "Eos, Transactions American Geophysical Union" *American Geophysical Union*, 76, 121-122 (1995).
- "Energetics of Silicate Melts," A. Navrotsky, *Rev. Mineral.*, 32, 121-144 (1995).
- "Report on Borate Calorimetry," D. Huang, A. Navrotsky, Work for U.S. Borax Co., (1995).
- "Calorimetric Study of the Coesite-Stishovite Transformation and Calculation of the Phase Boundary," J. Liu, L. Topor, J. Zhang, A. Navrotsky, and R. C. Liebermann, *Phys. Chem. Min.*, 23, 11-16 (1996).

"Thermochemistry of Mixing Strontianite [SrCO₃(s)] and Aragonite [CaCO₃(s)] to Form Ca_xSr_{1-x}CO₃(s) Solid Solutions," W. H. Casey, L. Chai, A. Navrotsky, and P. A. Rock, *Geochim. Cosmochim. Acta*, 60, 933-940 (1996).

"Thermochemistry of the New Silica Polymorph Moganite," I. Petrovic, P. J. Heaney, and A. Navrotsky, *Phys. Chem. Min.*, 23, 119-126 (1996).

"Synthesis of High Pressure Hydrous Magnesium Silicates: Observations and Analysis," P. C. Burnley and A. Navrotsky, *Amer. Miner.*, 81, 317-326 (1996).

"Praseodymium and High-Temperature Superconductivity: Thermodynamic, Structural, and Critical Correlations," V. E. Lamberti, M. A. Rodriguez, J. D. Trybulski, and A. Navrotsky, *J. Mater. Res.*, 11, 1061-1064 (1996).

"Convergent Beam Electron Diffraction and High Resolution Electron Microscopy of CaFeTi₂O₆ Perovskite," N. Yao, A. Navrotsky, and K. Leinenweber, *J. Solid State Chem.*, 123, 73-82 (1996).

"Thermochemistry of Natural Potassium Sodium Calcium Leonhardite and its Cation-Exchanged Forms," I. Kiseleva, A. Navrotsky, I. A. Belitsky, and B. A. Fursenko, *Amer. Miner.*, 81, 668-675 (1996).

"Thermochemistry and Phase Equilibria in Calcium Zeolites," I. Kiseleva, A. Navrotsky, I. A. Belitsky, and B. A. Fursenko, *Amer. Miner.*, 81, 658-667 (1996).

"Thermodynamic Properties of Manganese Oxides," S. Fritsch and A. Navrotsky, *J. Amer. Ceram. Soc.*, 79, 1761-1768 (1996).

"Thermodynamic Properties and Hydrogen Speciation from Vibrational Spectra of Dense Hydrous Magnesium Silicates," H. Cynn, A. M. Hofmeister, P. C. Burnley, and A. Navrotsky, *Phys. Chem. Min.*, 23, 361-376 (1996).

"Coordination Chemistry of Ti(IV) in Silicate Glasses and Melts: II. Glasses at Ambient Temperature and Pressure," F. Farges, G. E. Brown, Jr., A. Navrotsky, H. Gan, and J. J. Rehr, *Geochim. Cosmochim. Acta*, 60, 3039-3053 (1996).

"Coordination Chemistry of Ti(IV) in Silicate Glasses and Melts: III. Glasses and Melts from Ambient to High Temperatures," F. Farges, G. E. Brown, Jr., A. Navrotsky, H. Gan, J. J. Rehr, *Geochim. Cosmochim. Acta*, 60, 3055-3065 (1996).

"Effects of Pressure on Order-Disorder Reactions," R. M. Hazen and A. Navrotsky, *Amer. Miner.*, 81, 1021-1035 (1996).

"Synthesis, Characterization, and Energetics of Solid Solution along the Dolomite-Ankerite Join, and Implication for the Stability of Ordered CaFe(CO₃)₂," L. Chai and A. Navrotsky, *Amer. Miner.*, 81, 1141-1147 (1996).

"Ti⁴⁺ in Silicate Melts: Energetics from High-Temperature Calorimetric Studies and Implications for Melt Structure," H. Gan, M. C. Wilding, and A. Navrotsky, *Geochim. Cosmochim. Acta*, 60, 4123-4131 (1996).

"Synthesis, Characterization, and Enthalpy of Mixing of the (Fe,Mg)CO₃ Solid Solution," L. Chai and A. Navrotsky, *Geochim. Cosmochim. Acta*, 60, 4377-4383 (1996).

"Energetics of Formation of KF-GdF₃ Binary-Intermediate Compounds," J. O. Eckert, Jr., I-Ching Lin, M. M. Lencka, P. M. Bridenbaugh, A. Navrotsky, R. A. Laudise, and R. E. Riman, *Thermochim. Acta*, 286, 233-243 (1996).

"Thermochemistry of Metal Nitrides in the Ca/Zn/N System," J. McHale, G. R. Kowach, A. Navrotsky, and F. J. DiSalvo, *Chemistry - A European Journal*, 2, 1514-1517 (1996).

- "Active Components in Clay Condensates and Extracts as Potential Geocatalysts," L. Heller-Kallai, T. P. Goldstein, and A. Navrotsky, *Clays Clay Miner.*, 44, 393-397 (1996).
- "Energetics of Manganese Oxides," S. Fritsch and A. Navrotsky, *Mat. Res. Soc. Symp. Proc.*, 398, 667-672 (1996).
- "Thermochemistry of Metal Nitrides in the Ca/Zn/N System," J. M. McHale, G. R. Kowach, A. Navrotsky, F. J. DiSalvo, *Chem. Eur. J.* 2, 1514-1517 (1996).
- "Thermochemistry of Borosilicate Melts and Glasses — From Pyrex to Pegmatites," A. Navrotsky, *Rev. Mineral.*, 33, 165-180 (1996).
- "Effects of Increased Surface Area and Chemisorbed H₂O on the Relative Stability of Nanocrystalline γ -Al₂O₃ and α -Al₂O₃," J. M. McHale, A. Navrotsky, and A. J. Perrotta, *J. Phys. Chem. B*, 101, 603-613 (1997).
- "Issues in the Energetics of Metastable Oxides and Oxyhydroxides," A. Navrotsky, *Mat. Res. Soc. Symp. Proc.*, 432, 3-14 (1997).
- "Thermochemical Studies of LnBa₂Cu₃O_{7- δ} (Ln = Pr, Nd, Eu, Gd, Dy, Ho, Tm), LnBa₂Cu₄O₈ (Ln = Sm, Eu, Gd, Dy, Ho), and Y_{1-x}Pr_xBa₂Cu₃O_{7- δ} ," V. E. Lamberti, M. A. Rodriguez, J. D. Trybulski, A. Navrotsky, and H. B. Liu, *Chem. Mater.*, 9, 932-942 (1997).
- "Thermochemistry of Na-Faujasites with Varying Si/Al Ratios," I. Petrovic and A. Navrotsky, *Microporous Mater.*, 9, 1-12 (1997).
- "Thermochemistry of Double Carbonates in the K₂CO₃-CaCO₃ System," A. Navrotsky, R. L. Putnam, C. Winbo, and E. Rosen, *Amer. Miner.*, 82, 546-548 (1997).
- "Complete Fe-Mg Solid Solution in Lithium Niobate and Perovskite Structures in Titanates at High Pressures and Temperature," J. A. Linton, Y. Fei, and A. Navrotsky, *Amer. Miner.*, 82, 639-642 (1997).
- "Thermochemistry and the Enthalpy of Formation of Synthetic End Member (CaTiSiO₅) Titanite," D. Xirouchakis, S. Fritsch, R. L. Putnam, A. Navrotsky, and D. H. Lindsley, *Amer. Miner.*, 82, 754-759 (1997).
- "Surface Energies and Thermodynamic Phase Stability in Nanocrystalline Aluminas," J. M. McHale, A. Auroux, A. J. Perrotta, and A. Navrotsky, *Science*, 277, 788-791 (1997).
- "High Temperature Calorimetric Study of Glass-Forming Fluorozirconates," I.-C. Lin, A. Navrotsky, J. Ballato, and R. Riman, *J. Non-Cryst. Solids*, 215, 113-124 (1997).
- "Heat Capacity of Glass-Forming Fluorozirconates," I.-C. Lin and A. Navrotsky, *J. Non-Cryst. Solids*, 215, 125-133 (1997).
- "Energetics of Low-Temperature Polymorphs of Manganese Dioxide and Oxyhydroxide," S. Fritsch, J. E. Post, and A. Navrotsky, *Geochim. et Cosmochim. Acta*, 61, 2613-2616 (1997).
- "²⁹Si and ¹H NMR Spectroscopy of High-pressure Hydrous Magnesium Silicates," B. L. Phillips, P. C. Burnley, K. Warminghaus, and A. Navrotsky, *Phys. Chem. Min.*, 24, 179-190 (1997).
- "Thermochemistry of Fluoride Perovskites: Heat Capacity, Enthalpy of Formation and Phase Transition of NaMgF₃," L. Topor, A. Navrotsky, Y. Zhao, and D. J. Weidner, *J. Solid State Chem.*, 132, 131-138 (1997).

- "Structural Variation in $\text{Ca}(\text{Ti}_x\text{Si}_{1-x})\text{O}_3$ Perovskites ($1 > x > 0.65$) and the Ordered Phase $\text{Ca}_2\text{TiSiO}_6$," K. Leinenweber, A. Grzechnik, M. Voorhees, A. Navrotsky, A. Yao, and P. F. McMillan, *Phys. Chem. Min.*, 24, 528-534 (1997).
- "Thermochemical Insights into Rapid Solid-State Reaction Synthesis of β -Sialon," A. Navrotsky, S. H. Risbud, J. Liang, and V. J. Leppert, *J. Phys. Chem. B*, 101, 9433-9435 (1997).
- "Energetics of Ternary Nitrides: The Li-Ca-Zn-N and Ca-Ta-N Systems," J. M. McHale, A. Navrotsky, G. R. Kowach, V. E. Balbarin, and F. J. DiSalvo, *Chem. Mater.*, 9, 1538-1546 (1997).
- "Titanium Dioxide-Surfactant Mesophases and Ti-TMS1," R. L. Putnam, N. Nakagawa, K. M. McGrath, N. Yao, I. A. Aksay, S. M. Gruner, and A. Navrotsky, *Chem. Mater.*, 9, 2690-2693 (1997).
- "Metastability of Spinel-type Solid Solutions in the SiO_2 - Al_2O_3 System," J. M. McHale, K. Yürekli, D. M. Dabbs, A. Navrotsky, S. Sundaresan, and I. A. Aksay, *Chem. Mater.*, 9, 3096-3100 (1997).
- "Thermochemistry of New, Technologically Important Inorganic Materials," A. Navrotsky, *Mater. Res. Soc. Bull.*, 22, 35-41 (1997).
- "Progress and New Directions in High Temperature Calorimetry Revisited," A. Navrotsky, *Phys. Chem. Miner.*, 24, 222-241 (1997).
- "Radiation Effects in Glasses Used for Immobilization of High-Level Waste and Plutonium Disposition," W. J. Weber, R. C. Ewing, C. A. Angell, G. W. Arnold, A. N. Cormack, J. M. Delaye, D. L. Griscom, L. W. Hobbs, A. Navrotsky, D. L. Price, A. M. Stoneham, and M. C. Weinberg, *J. Mater. Res.*, 12, 1946-1978 (1997).
- "Thermochemistry of Framework and Layer Manganese Dioxide Related Phases," S. Fritsch, J. E. Post, S. L. Suib, and A. Navrotsky, *Chem. Mater.* 10, 474-479 (1998).
- "Thermochemistry and Phase Equilibria of Hydrous Phases in the System $\text{MgO-SiO}_2\text{-H}_2\text{O}$: Implications for Volatile Transport to the Mantle," K. Bose and A. Navrotsky, *J. of Geophys. Res.*, 103, 9713-9719 (1998).
- "The Dissolution of Silica and Alumina in Silicate Melts: *in situ* High Temperature Calorimetric Studies," M. C. Wilding and A. Navrotsky, *Neus Jahrbuch für Mineralogie*, 172 Rosenhauer Memorial Volume, 177-201 (1998).
- "Nanocrystalline Spinel from Freeze Dried Nitrates: Synthesis, Energetics of Product Formation, and Cation Distribution," J. M. McHale, A. Navrotsky, and R. J. Kirkpatrick, *Chem. Mater.*, 10, 1083-1090 (1998).
- "The Energetics of Cubic Zirconia from Solution Calorimetry of Yttria- and Calcia-Stabilized Zirconia," I. Molodetsky and A. Navrotsky, *Zeitschrift für Physikalische Chemie*, 207, 59-65 (1998).
- "The Thermodynamics of Ordered Perovskites on the $\text{CaTiO}_3\text{-FeTiO}_3$ Join," J. Linton, A. Navrotsky, and Y. Fei, *Phys. Chem. Min.*, 25, 591-596 (1998).
- "Heat Capacities of Tellurites and Restructuring Thermodynamics on Glass Formation," I.-C. Lin and A. Navrotsky, *J. Non-Cryst. Solids*, 226, 256-264 (1998).
- "Phase Transition Energetics and Thermodynamic Properties of Ferroelectric PbTiO_3 ," G. A. Rossetti, Jr., J. P. Cline, and A. Navrotsky, *J. Mater. Res.*, 13, 3197-3206 (1998).
- "A Calorimetric Study of the Lanthanide Aluminum Oxides and the Lanthanide Gallium Oxides: Stability of the Perovskites and the Garnets," Y. Kanke and A. Navrotsky, *J. Solid State Chem.*, 141, 424-436 (1998).

- "Energetics of Stable and Metastable Low-Temperature Iron Oxides and Oxyhydroxides," C. Laberty and A. Navrotsky, *Geochim. Cosmochim. Acta*, 62, 2905-2913 (1998).
- "Structural Effects of Sr Substitution in $\text{La}_{2-x}\text{Sr}_x\text{NiO}_{4+\delta}$," P. J. Heaney, G. Sarosi, V. E. Lamberti, A. Mehta, and A. Navrotsky, *Phys. Rev. B*, 57, 10370-10378 (1998).
- "Melt Energetics at High Temperature and Pressure," M. C. Wilding, and A. Navrotsky, *Mater. Res. Soc. Symp. Proc.*, 499 (High-Pressure Materials Research), 185-193 (1998).
- "Thermochemistry of Crystalline and Amorphous Phases Related to Radioactive Waste," A. Navrotsky, in "Actinides and the Environment," P. A. Sterne et al., Eds., *Kluwer Academic Publishers, The Netherlands*, 267-297 (1998).
- "Thermodynamics of High Pressure Phases," A. Navrotsky, in "Ultrahigh-Pressure Mineralogy: Physics and Chemistry of the Earth's Deep Interior," R. J. Hemley, Ed., "Reviews in Mineralogy," P. H. Ribbe, Series Ed., *Min. Soc. Amer.*, 37, 319-341 (1998).
- "Energetics and Crystal Chemical Systematics among Ilmenite, Lithium Niobate, and Perovskite Structures," A. Navrotsky, *Chem. Mater.*, 10, 2787-2793 (1998).
- "Enthalpy of Formation of Katoite $\text{Ca}_3\text{Al}_2[(\text{OH})_4]_3$: Energetics of the Hydrogarnet Substitution," M. Schoenitz and A. Navrotsky, *Amer. Miner.*, 84, Prewitt Volume, 389-391 (1999).
- "Thermodynamics of Glass Formation and Metastable Solidification of Molten $\text{Y}_3\text{Al}_5\text{O}_{12}$," I.-C. Lin, A. Navrotsky, J. K. R. Weber, and P. C. Nordine, *J. Non-Cryst. Solids*, 243, 273-276 (1999).
- "Thermodynamics of Formation of Zirconolite ($\text{CaZrTi}_2\text{O}_7$) from $T = 298.15 \text{ K}$ to $T = 1500 \text{ K}$," R. L. Putnam, A. Navrotsky, B. F. Woodfield, J. Boerio-Goates, and J. L. Shapiro, *J. Chem. Thermo.*, 31, 229-243 (1999).
- "Molar Heat Capacity and Thermodynamic Functions of Zirconolite, $\text{CaZrTi}_2\text{O}_7$," B. F. Woodfield, J. Boerio-Goates, J. L. Shapiro, R. L. Putnam, and A. Navrotsky, *J. Chem. Thermo.*, 31, 245-253 (1999).
- "Calorimetric Investigation of Tricritical Behavior in Tetragonal $\text{Pb}(\text{Zr}_x\text{Ti}_{1-x})\text{O}_3$," G. A. Rossetti, Jr. and A. Navrotsky, *J. Solid State Chem.*, 144, 188-194 (1999).
- "Heat Capacity, Third Law Entropy, and Formation Energetics of Zirconolite, $\text{CaZrTi}_2\text{O}_7$," R. L. Putnam, A. Navrotsky, B. F. Woodfield, J. L. Shapiro, and J. Boerio-Goates in "Environmental Issues and Waste Management Technologies in the Ceramic and Nuclear Industries IV, *Ceram. Trns.*, Volume 93," J.C. Marra, and G.T. Chandler, Eds., *The American Ceramic Society, Westerville, Ohio*, 339-347(1999).
- "Energetics of Ternary Nitride Formation in the (Li, Ca) – (B, Al) – N System," J. M. McHale, A. Navrotsky, and F. J. DiSalvo, *Chem. Mater.*, 11, 1148-1152 (1999).
- "Energetics of Kaolin Polymorphs," D. de Ligny and A. Navrotsky, *Amer. Miner.*, 84, 506-516 (1999).
- "Enthalpy of Formation of Rare Earth Silicates (Y_2SiO_5 and Yb_2SiO_5) and N-Containing Silicate $[\text{Y}_{10}(\text{SiO}_4)_6\text{N}_2]$," J.-J. Liang, A. Navrotsky, T. Ludwig, H. J. Seifert, and F. Aldinger, *J. Mater. Res.*, 14, 1181-1185 (1999).
- "Energetics of Nitridophosphates PON and LiNaPON Glasses," F. Tessier, A. Le Sauze, R. Marchand, and A. Navrotsky, *Mater. Res. Soc. Symp. Proc.*, 547, 389-394 (1999).
- "A Lesson from Ceramics," A. Navrotsky, *Science*, 284, 1788-1789 (1999).
- "Silicon Nitride: Enthalpy of Formation of the α - and β -Polymorphs and the Effect of C and O Impurities," J.-J. Liang, L. Topor, A. Navrotsky, and M. Mitomo, *J. Mater. Res.*, 14, 1959-1968 (1999).

- "Energetics of Rare Earth Manganese Perovskites $A_{1-x}A'_xMnO_3$ ($A=La, Nd, Y$ and $A'=Sr, La$) Systems," C. Laberty, A. Navrotsky, C. N. R. Rao, and P. Alphonse, *J. Solid State Chem.*, 145, 77-87 (1999).
- "Thermochemistry of Stuffed Quartz-Derivative Phases Along the Join $LiAlSiO_4-SiO_2$," H. Xu, P. J. Heaney, A. Navrotsky, L. Topor, and J. Liu, *Amer. Miner.*, 84, 1360-1369 (1999).
- "Phase Equilibria Among the Superconductors in the $Y_2O_3-BaO-Cu-O$ System," Z. Zhou and A. Navrotsky, *J. Mater. Res.*, 14, 3511-3517 (1999).
- "The $MgTiO_3-FeTiO_3$ Join at High Pressure and Temperature," J. Linton, Y. Fei, and A. Navrotsky, *Amer. Miner.*, 84, 1595-1603 (1999).
- "Calorimetric Studies of the Energetics of Order-Disorder in the System $Mg_{1-x}Fe_xCa(CO_3)_2$," A. Navrotsky, D. Dooley, R. Reeder, and P. Brady, *Amer. Miner.*, 84, 1622-1626 (1999).
- "Chabazite: Energetics of Hydration, Enthalpy of Formation, and Effect of Cations on Stability," S.-H. Shim, A. Navrotsky, T. R. Gaffney, and J. McDougall, *Amer. Miner.*, 84, 1870-1882 (1999).
- "Thermochemistry of Hf-Zirconolite, $CaHfTi_2O_7$," R. L. Putnam, A. Navrotsky, B. F. Woodfield, J.L. Shapiro, R. Stevens, and J. Boerio-Goates, *Mat. Res. Soc. Symp. Proc.*, 556, 11-18 (1999).
- "Molar Heat Capacity and Thermodynamic Functions for $CaTiO_3$," B. F. Woodfield, J. L. Shapiro, R. Stevens, J. Boerio-Goates, R. L. Putnam, K. B. Helean, and A. Navrotsky, *J. Chem. Thermodyn.*, 31, 1573-1583 (1999).
- "Thermochemistry of $Si_{6-z}Al_zO_2N_{8-z}$ ($z = 0$ to 3.6) Materials," J.-J. Liang, A. Navrotsky, V. J. Leppert, M. J. Paskowitz, S. H. Risbud, T. Ludwig, H. J. Seifert, F. Aldinger, and M. Mitomo, *J. Mater. Res.*, 14, 4630-4636 (1999).
- "Evaluation of Thermally Converted Silicotitanate Waste Forms," Y. Su, M. L. Balmer, L. Wang, B. C. Bunker, M. Nyman, T. Nenoff, and A. Navrotsky, *Mater. Res. Soc. Symp. Proc.*, 556, 77-84 (1999).
- "Stability of the ULM-n Microporous Gallophosphates in the System $GaPO_4-HF-Amine-H_2O$," C. Gerardin, A. Navrotsky, T. Loiseau, and G. Ferey, 12th International Zeolite Conference, *Materials Research Society*, 1737-1742 (1999).
- "New Crystalline Silicotitanate (CST) Waste Forms: Hydrothermal Synthesis and Characterization of CS-SI-TI-O Phases," M. Nyman, T.M. Nenoff, Y. Su, M.L. Balmer, A. Navrotsky, and H. Xu, *Mater. Res. Soc. Symp. Proc.*, 556, 71-76 (1999).
- "High Temperature Reaction Calorimetry Applied to Metastable and Nanophase Materials," A. Navrotsky, *J. Therm. Anal. Calorim.*, 57, 653-658 (1999).
- "Thermochemical Approach of the Precipitation of Metallic Particles in 'LiNaPON' glasses," F. Tessier, A. Le Sauze, A. Navrotsky, and R. Marchand, *Phos. Res. Bull.*, 10, 605-610 (1999).
- "Thermochemistry of Phosphorus Oxynitrides: PON and LiNaPON Glasses," F. Tessier, A. Navrotsky, A. Le Sauze, and R. Marchand, *Chem. Mater.*, 12, 148-154 (2000).
- " ^{29}Si and ^{27}Al MAS-NMR Spectroscopy of β -eucryptite ($LiAlSiO_4$): The Enthalpy of Si, Al Ordering," B. L. Phillips, H. Xu, P. J. Heaney, and A. Navrotsky, *Amer. Miner.*, 85, 181-188 (2000).
- "Thermochemistry of $YBa_2Cu_{3-x}M_xO_y$ ($M = Ni, Zn$)," M. A. Rodriguez, A. Navrotsky, and F. Licci, *Physica C*, 329, 88-94 (2000).
- "Energetics of X-ray Amorphous Zirconia and the Role of Surface Energy in its Formation," I. Molodetsky, A. Navrotsky, M. Paskowitz, V. Leppert, and S. Risbud, *J. Non-Cryst. Solids*, 262, 106-113 (2000).

- "Thermochemistry of Microporous Silicotitanate Phases in the Na₂O-Cs₂O-SiO₂-TiO₂-H₂O System," H. Xu, A. Navrotsky, M. D. Nyman, T. M. Nenoff, *J. Mater. Res.*, 15, 815-823 (2000).
- "High Temperature Calorimetric Studies of the Heat of Solution of La₂O₃ in Silicate Liquids," M. C. Wilding and A. Navrotsky, *J. Non-Cryst. Solids*, 265, 238-251 (2000).
- "Effects of Water, Cations, and Structure on Energetics of Layer and Framework Phases, Na_xMg_yMnO₂•nH₂O," Z.-R. Tian, G. Xia, J. Luo, S. L. Suib, and A. Navrotsky, *J. Phys. Chem. B*, 104, 5035-5039 (2000).
- "Enthalpy of Formation of Gallium Nitride," M. R. Ranade, F. Tessier, A. Navrotsky, V. J. Leppert, S. H. Risbud, F. J. DiSalvo, and C. M. Balkas, *J. Phys. Chem. B*, 104, 4060-4063 (2000).
- "Energetics of Formation and Hydration of Ion Exchanged Zeolite Y," S. Yang and A. Navrotsky, *Microporous Mesoporous Mater.*, 37, 175-186 (2000).
- "Erratum to: Energetics of Formation and Hydration of Ion-exchanged Zeolite Y," S. Yang and A. Navrotsky, [Microporous and Mesoporous Materials 37, (2000) 175–186], *Microporous Mesoporous Mater.*, 41, 345-346 (2000).
- "*In Situ* Calorimetric Structural and Compositional Study of Zeolite Synthesis in the System 5.15Na₂O-1.00Al₂O₃-3.28SiO₂-165H₂O," S. Yang, A. Navrotsky, and B. Phillips, *J. Phys. Chem. B*, 104, 6071-6080 (2000).
- "Energetics of Binary Iron Nitrides," F. Tessier, A. Navrotsky, R. Niewa, A. Leineweber, H. Jacobs, S. Kikkawa, M. Takahashi, F. Kanamaru, and F. J. DiSalvo, *Solid State Sci.*, 2, 457-462 (2000).
- "Thermodynamics of Formation for Two Cerium Aluminum Oxides, CeAlO₃(s) and CeAl₁₂O_{19.918}(s), and Cerium Sesquioxide, Ce₂O₃(s) at T = 298.15 K," R. L. Putnam, A. Navrotsky, E. H. P. Cordfunke, and M. E. Huntelaar, *J. Chem. Thermodyn.*, 32, 911-921 (2000).
- "Effect of Framework and Layer Substitution in Manganese Dioxide Related Phases on the Energetics," C. Laberty, S. L. Suib, and A. Navrotsky, *Chem. Mater.*, 12, 1660-1665 (2000).
- "Thermochemistry of Pure-Silica Zeolites," P. M. Piccione, C. Laberty, S. Yang, M. A. Cambor, A. Navrotsky, and M. E. Davis, *J. Phys. Chem. B*, 104, 10001-10011 (2000).
- "The Enthalpy of Transformation of Ca(OH)₂-I (Portlandite) to Ca(OH)₂-II (Eul₂ structure) by Low-Temperature DSC," M. Schoenitz, A. Navrotsky, and K. Leinenweber, *Phys. Chem. Min.*, 27, 604-609 (2000).
- "Energetics of Oxidation of Oxynitrides: Zr-N-O, Y-Zr-N-O, Ca-Zr-N-O, and Mg-Zr-N-O," I. Molodetsky, A. Navrotsky, F. DiSalvo, and M. Lerch, *J. Mater. Res.*, 15, 2558-2570 (2000).
- "Possible Presence of High-pressure Ice in Cold Subducting Slabs," C. R. Bina and A. Navrotsky, *Nature*, 408, 844-847 (2000).
- "Surface Enthalpy of Boehmite," J. Majzlan, A. Navrotsky, W. H. Casey, *Clays Clay Miner.*, 48, 699-707 (2000).
- "Nanomaterials in the Environment, Agriculture, and Technology (NEAT)," A. Navrotsky, *J. Nanoparticle Res.* 2, 321-323 (2000).
- "Thermochemistry of Complex Perovskites," A. Navrotsky, in "Fundamental Physics of Ferroelectrics 2000: Aspen Center for Physics Winter Workshop," R. E. Cohen, Ed., *American Institute of Physics*, 288-296 (2000).

- "Thermodynamics of Formation of Binary and Ternary Nitrides in the System Ce-Mn-N," F. Tessier, M. R. Ranade, A. Navrotsky, R. Niewa, F. J. DiSalvo, A. Leineweber, H. Jacobs, *Z. Anorg. Allg. Chem.*, 627, 194-200 (2001).
- "A Calorimetric Study of Zoisite and Clinozoisite Solid Solutions," E. A. Smelik, G. Franz, and A. Navrotsky, *Amer. Miner.*, 86, 80-91 (2001).
- "Systematics in the Enthalpies of Formation of Anhydrous Aluminosilicate Zeolites, Glasses, and Dense Phases," A. Navrotsky and Z.-R. Tian, *Chemistry, A European Journal*, 7, 769-774 (2001).
- "Enthalpy of Formation of CaSi_2O_5 , a Quenched High-Pressure Phase with Pentacoordinate Silicon," M. Schoenitz, A. Navrotsky, and N. Ross, *Phys. Chem. Min.*, 28, 57-60 (2001).
- "Crystal Properties and Energetics of Synthetic Kaolinite," C. I. Fialips, A. Navrotsky, and S. Petit, *Amer. Miner.*, 86, 304-311 (2001).
- "Energetics of Substituted Pollucites Along the $\text{CsAlSi}_2\text{O}_6$ - $\text{CsTiSi}_2\text{O}_{6.5}$ Join: A High-Temperature Calorimetric Study," H. Xu, A. Navrotsky, M. L. Balmer, Y. Su, and E. R. Bitten, *J. Am. Ceram. Soc.*, 84, 555-560 (2001).
- "Thermodynamics of Ion-exchanged and Natural Clinoptilolite," S. Yang, A. Navrotsky, and R. Wilkin, *Amer. Miner.*, 86, 438-447 (2001).
- "Thermochemical Study of Calcium Zeolites - Heulandite and Stilbite" I. Kiseleva, A. Navrotsky, I. Belitsky, and B. Fursenko, *Amer. Miner.*, 86, 448-455 (2001).
- "Synthesis, Structure Determination, and Aqueous Durability of $\text{Cs}_2\text{ZrSi}_3\text{O}_9$," M. L. Balmer, Y. Su, H. Xu, E. Bitten, D. McCready, and A. Navrotsky, *J. Am. Ceram. Soc.*, 84, 153-160 (2001).
- "The Thermodynamics of Formation, Molar Heat Capacity and Thermodynamic Functions of $\text{ZrTiO}_4(\text{cr})$," B. K. Hom, R. Stevens, B. F. Woodfield, J. Boerio-Goates, R. L. Putnam, K. B. Helean, and A. Navrotsky, *J. Chem. Thermodyn.*, 33, 165-178 (2001).
- "The Assessment of Thermodynamic Parameters in the Al_2O_3 - Y_2O_3 System and Phase Relations in the Y-Al-O System," O. Fabrichnaya, H. J. Seifert, T. Ludwig, F. Aldinger, and A. Navrotsky, *Scan. J. of Metall.*, 30, 175-183, (2001).
- "Thermal Expansion and Structural Transformations of Stuffed Derivatives of Quartz along the LiAlSiO_4 - SiO_2 Join: A Variable-Temperature Powder Synchrotron XRD Study," H. Xu, P. J. Heaney, A. Navrotsky, *Phys. Chem. Miner.*, 28, 302-312, (2001).
- "An *In Situ* Calorimetric Study of the Synthesis of FAU Zeolite," S. Yang, A. Navrotsky, B. L. Phillips, *Microporous Mesoporous Mater.*, 46, 137-151, (2001).
- "Calorimetric Study of Perovskite Solid Solutions in the CaSiO_3 - CaGeO_3 System," H. Kojitani, A. Navrotsky, and M. Akaogi, *Phys. Chem. Min.*, 28, 413-420, (2001).
- "Vitreous Forsterite (Mg_2SiO_4): Synthesis, Structure, and Thermochemistry, ," J. A. Tangeman, B. L. Phillips, A. Navrotsky, J. K. R. Weber, A. D. Hixson, and T. S. Key, *Geophys. Res. Lett.*, 28, 2517-2520, (2001).
- "Thermodynamic Data of the High-Pressure Phase $\text{Mg}_5\text{Al}_5\text{Si}_6\text{O}_{21}(\text{OH})_7$ (Mg-sursassite)," K.-D. Greval, A. Navrotsky, W.-A. Kaul, D. W. Fasshauer, and J. Majzlan, *Phys. Chem. Miner.*, 28, 475-487, (2001).
- "Thermodynamic Modelling of Oxide and Oxynitride Phases," S. A. Degterov, A. D. Pelton, H. J. Seifert, O. Fabrichnaya, J. P. Hajra, A. Navrotsky, K. Helean, V. Swamy, A. V. D. E. Silva, P. Spencer, *Zeit. Metallkunde*, 92, 533-549, (2001).

- "Thermochemistry of Rare Earth Orthophosphates," S. V. Ushakov, K. B. Helean, A. Navrotsky, and L. A. Boatner, *J. Mater. Res.*, 16, 2623- 2633, (2001).
- "Enthalpies of Formation of Microporous Titanosilicates ETS-4 and ETS-10," H. Xu, Y. Zhang, and A. Navrotsky, *Microporous Mesoporous Mater.*, 47, 285-291, (2001).
- "Phase Equilibria and Thermodynamics in the Y_2O_3 - Al_2O_3 - SiO_2 System," O. Fabricznaya, H. J. Seifeit, R. Weiland, T. Ludwig, F. Aldinger, and A. Navrotsky, *Zeit. Metallkunde*, 92, 1083-1097, (2001).
- "Enthalpies of Formation of Lead Zirconate Titanate (PZT) Solid Solutions," M. V. Rane, A. Navrotsky, and G. A. Rossetti, *J. Solid State Chem.*, 161, 402-409, (2001).
- "Thermodynamic Data of Lawsonite and Zoisite in the System CaO - Al_2O_3 - SiO_2 - H_2O Based on Experimental Phase Equilibria and Calorimetric Work," K.-D. Grevel, M. Schoenitz, V. Skrok, A. Navrotsky, and W. Schreyer, *Contrib. Mineral. Petrol.*, 142, 298-308, (2001).
- "Enthalpies of Formation of Lanthanide Oxyapatite Phases," A. S. Risbud, K. B. Helean, M. C. Wilding, P. Lu, and A. Navrotsky, *J. Mater. Res.*, 16, 2780-2783 (2001).
- "Calorimetric Determination of the Enthalpy of Formation of InN and Comparison with AlN and GaN," M. R. Ranade, F. Tessier, A. Navrotsky, and R. Marchand, *J. Mater. Res.*, 16, 2824-2831 (2001).
- "Systematic Trends and Prediction of Enthalpies of Formation of Refractory Lanthanide and Actinide Ternary Oxide Phases," A. Navrotsky, "Environmental Issues and Waste Management Technologies in the Ceramic and Nuclear Industries VI" from the 102nd American Ceramic Society Meeting, St. Louis, MO, April 2000., *Ceram. Trns.*, 119, 137-146 (2001)
- "Energetics of Dissolution of Gd_2O_3 and HfO_2 in Sodium Alumino-Borosilicate Glasses," Y. Zhang, A. Navrotsky, H. Li, L. Li, L. Davis, and D. M. Strachan, *J. Non-Cryst. Solids*, 296, 93-101 (2001).
- "Formation Energetics of Ceramic Phases Related to Surplus Plutonium Disposition," R. L. Putnam, U. F. Gallegos, B. B. Ebbinghaus, A. Navrotsky, K. B. Helean, S. V. Ushakov, B. F. Woodfield, J. Boerio-Goates, and M. A. Williamson, "Environmental Issues and Waste Management Technologies in the Ceramic and Nuclear Industries VI" from the 102nd American Ceramic Society Meeting, St. Louis, MO, April 2000., *Ceram. Trns.*, 119, 147-158 (2001).
- "Enthalpies of Formation of $Gd_2(Ti_{2-x}Zr_x)O_7$ Pyrochlores," K. B. Helean, B. D. Begg, A. Navrotsky, B. Ebbinghaus, W. J. Weber, and R. C. Ewing, *Mater. Res. Soc. Proc.*, 663, 691-697 (2001).
- "Molar Heat Capacities and Thermodynamic Functions of $CaHfTi_2O_7$ (cr) and $CaZr_{0.26}Hf_{0.74}Ti_2O_7$ (cr)," R. Stevens, B. K. Hom, J. Boerio-Goates, B. F. Woodfield, R. L. Putnam, J. Gutierrez, and A. Navrotsky, *J. Chem. Thermodyn.*, 33, 1441-1455 (2001).
- "Synthesis and Anion Exchange of Tunnel Structure Akaganeite," J. Cai, J. Liu, Z. Gao, A. Navrotsky, and S. L. Suib, *Chem. Mater.*, 13, 4595-4602 (2001).
- "Thermodynamic Properties of the Calcium Zeolites Stilbite and Stellerite," I. A. Kiseleva, A. Navrotsky, I. A. Belitsky, and A. Fursenko, *Geochem. Int.*, 39, 170-176 (2001).
- "Synthesis, Characterization and Ion Exchange of Novel Sodium Niobate Phases," T. M. Nenoff, M. Nyman, Y. Su, M. L. Balmer, A. Navrotsky, and H. Xu, *ACS Symp. Ser.*, 778 (Nuclear Site Remediation), 175-186 (2001).
- "High-Pressure Phase Relations along the $MgSiO_3$ - $MgAlO_{2.5}$ Join," H. Kojitani, A. Navrotsky, J. Zhang, and D. J. Weidner, *Koatsuryoku no Kagaku to Gijutsu*, 11 (Spec. Issue), 94 (2001).
- "Thermodynamic Characteristics of Heulandite and of its Equilibrium with Stilbite," I. A. Kiseleva, A. Navrotsky, I. A. Belitskii, and B. A. Fursenko, *Vestnik Moskovskogo Universiteta, Seriya 4: Geologiya* (2), 42-48 (2001).

- "Thermochemical Studies of Nitrides and Oxynitrides by Oxidative Oxide Melt Calorimetry," A. Navrotsky, *J. Alloys Compd.* 321, 300-306 (2001).
- "High Temperature Oxide Melt Calorimetry of Oxides and Nitrides," A. Navrotsky, "Huffman Lecture at ICCT 2000," *J. Chem. Thermodyn.*, 33, 859-871 (2001).
- "Thermochemistry of Nanomaterials," A. Navrotsky, in "Reviews in Mineralogy and Geochemistry: Nanoparticles and the Environment" J. F. Banfield and A. Navrotsky, Eds., *Mineralogical Society of America and the Geochemical Society, Washington, DC*, 44, 73-103 (2001).
- "Entropy of Pure Silica Molecular Sieves," P. M. Piccione, B. Woodfield, J. Boerio-Goates, A. Navrotsky, and M. E. Davis, *J. Phys. Chem. B.*, 105, 6025-6030 (2001).
- "Thermodynamic and Structural Properties of Sodium Lithium Niobate Solid Solutions," I. Pozdnyakova, A. Navrotsky, L. Shilkina, and L. Reznitchenko, *J. Am. Ceram. Soc.*, 85, 379-384 (2002).
- "The Enthalpy of Formation and Internally Consistent Thermodynamic Data of Mg-staurolite," K.-D. Grevel, A. Navrotsky, T. Fockenberg, and J. Majzlan, *Amer. Miner.*, 87, 397-404 (2002).
- "Energetics of Nanoarchitected TiO₂-ZrO₂ and TiO₂-MoO₃ Composite Materials," M. R. Ranade, S. H. Elder, and A. Navrotsky, *Chem Mater.*, 14, 1107-1114 (2002).
- "An *In Situ* Calorimetric Study of Zeolite Crystallization Kinetics," S. Yang and A. Navrotsky, *Microporous Mesoporous Mater.*, 52, 93-103 (2002).
- "Thermodynamics of Pure-Silica Molecular Sieve Synthesis," P. M. Piccione, S. Y. Yang, A. Navrotsky, and M. E. Davis, *J. Phys. Chem. B.*, 106, 3629-3638 (2002).
- "Thermochemistry and Aqueous Solubilities of Hydrotalcite-like Solids," R. K. Allada, A. Navrotsky, H. T. Berbeco, and W. H. Casey, *Science*, 296, 721-723 (2002).
- "Energetics of Nanocrystalline TiO₂," M. R. Ranade, A. Navrotsky, H. Z. Zhang, J. F. Banfield, S. H. Elder, A. Zaban, P. H. Borse, S. K. Kulkarni, G. S. Doran, and H. J. Whitfield, *Proc. Nat. Acad. Sci.*, 99, Suppl. 2, 6476-6481 (2002).
- "Crystal Chemistry and Phase Transitions in Substituted Pollucites Along the CsAlSi₂O₆-CsTiSi₂O_{6.5} Join: A Powder Synchrotron X-ray Diffractometry Study," H. Xu, A. Navrotsky, M. L. Balmer, Y. Su, *J. Am. Ceram. Soc.*, 85, 1235-1242 (2002).
- "Enthalpies of Formation of Ce-Pyrochlore, Ca_{0.93}Ce_{1.00}Ti_{2.035}O_{7.00}, U-Pyrochlore, Ca_{1.46}U⁴⁺_{0.23}U⁶⁺_{0.46}Ti_{1.85}O_{7.00} and Gd-Pyrochlore, Gd₂Ti₂O₇: Three Materials Relevant to the Proposed Waste Form for Excess Weapons Plutonium," K. B. Helean, A. Navrotsky, E. R. Vance, M. L. Carter, B. Ebbinghaus, O. Krikorian, J. Kian, L. M. Wang, and J. G. Catalano, *J. Nucl. Mater.*, 303, 226-239 (2002).
- "Heat Capacities, Third-Law Entropies and Thermodynamic Functions of SiO₂ Molecular Sieves from T = 0 K to 400 K," J. Boerio-Goates, R. Stevens, B. K. Hom, B. F. Woodfield, P. M. Piccione, M. E. Davis, and A. Navrotsky, *J. Chem. Thermodyn.*, 34, 205-227 (2002).
- "Energetics of Anhydrite, Barite, Celestine, and Anglesite: A High-temperature and Differential Scanning Calorimetry Study," J. Majzlan, A. Navrotsky, and J. M. Neil, *Geochim. Cosmochim. Acta*, 66, 1839-1850 (2002).
- "High-Silica Zeolites: A Relationship Between Energetics and Internal Surface Area," E. C. Moloy, L. P. Davila, J. F. Shackelford, and A. Navrotsky, *Microporous Mesoporous Mater.*, 54, 1-13 (2002).
- "*In Situ* Calorimetric Study of the Growth of Silica TPA-MFI Crystals from an Initially Clear Solution," S. Y. Yang and A. Navrotsky, *Chem. Mater.*, 14, 2803-2811 (2002).

- "Formation Enthalpies of Tetravalent Lanthanide Perovskites by High Temperature Oxide Melt Solution Calorimetry," S. V. Ushakov, J. Cheng, A. Navrotsky, J. R. Wu, and S. M. Haile, *Mater. Res. Soc. Symp. Proc.*, 718, 71-76 (2002).
- "Aluminum in Magnesium Silicate Perovskite: Synthesis and Energetics of Defect Solid Solutions," A. Navrotsky, M. Schoenitz, H. Kojitani, H. Xu, J. Azhang, D. J. Weidner, M. Akaogi, R. Jeanloz, *Mater. Res. Soc. Symp. Proc.*, 718, 103-108 (2002).
- "Thermochemistry of Substituted Perovskites in the $\text{NaTi}_x\text{Nb}_{1-x}\text{O}_{3-0.5x}$ System," H. Xu, A. Navrotsky, M. L. Balmer, Y. Su, *Mater. Res. Soc. Symp. Proc.*, 718, 65-70 (2002).
- "Lattice Energies and Structural Distortions in $\text{Pb}(\text{Zr}_x\text{Ti}_{1-x})\text{O}_3$ Solid Solutions," G. A. Rossetti Jr, J. P. Cline, Y. M. Chiang, and A. Navrotsky, *J. Physics: Condens. Matter.*, 14, 8131-8143 (2002).
- "Thermodynamics and Crystal Chemistry of the Hematite-corundum Solid Solution and the FeAlO_3 Phase," J. Majzlan, A. Navrotsky, and B. J. Evans, *Phys. Chem. Miner.*, 29, 515-526 (2002).
- "Oxide Melt Solution Calorimetry of Rare Earth Oxides: Techniques, Problems, Cross-Checks, Successes," K. B. Helean and A. Navrotsky, *J. Therm. Anal. Calorim.*, 69, 751-771 (2002).
- "Thermochemistry of Amine-Templated Open Frameworks," C. Gérardin, T. Loiseau, G. Férey, F. Taulelle, and A. Navrotsky, *Chem. Mater.*, 14, 3181-3186 (2002).
- "Calorimetric Study of Glasses and Liquids in the Polyamorphic System $\text{Y}_2\text{O}_3\text{-Al}_2\text{O}_3$," M. C. Wilding, P. F. McMillan, A. Navrotsky, *Phys. Chem. Glasses*, 43, 306-312 (2002).
- "Thermodynamic and Structural Aspects of the Polyamorphic Transition in Yttrium and Other Rare-earth Aluminate Liquids," M. C. Wilding, P. F. McMillan, and A. Navrotsky, *Physica A*, 314, 379-390 (2002).
- "Thermodynamic Data of Lawsonite and Zoisite in the System $\text{CaO-Al}_2\text{O}_3\text{-SiO}_2\text{-H}_2\text{O}$ based on Experimental Phase Equilibria and Calorimetric Work," (Erratum), K.-D. Grevel, M. Schoenitz, V. Skrok, A. Navrotsky, W. Schreyer, *Contrib. Mineral. Petrol.*, 144, 255 (2002).
- "Thermodynamic Functions of Zirconolite and Their Uses in Computer Simulation," G. A. Bergman, A. Navrotsky, M. I. Ojovan, V. L. Klimov, O. K. Karlina, and G. Y. Pavlova, *Mater. Res. Soc. Symp. Proc.*, 713 (Scientific Basis for Nuclear Waste Management XXV), 365-371 (2002).
- "Future Directions in Solid State Chemistry: Report of the NSF-sponsored Workshop," R. J. Cava *et al.*, A. Reller, Ed., *Progress in Solid State Chemistry: An International Review Journal*, 30, 1-101 (2002).
- "Thermochemistry, Energetic Modeling, and Systematics," A. Navrotsky, *EMU Notes in Mineralogy* 4, Chapter 2, 5-31 (2002).
- "Thermodynamics of Pure Silica Molecular Sieve Synthesis," (Addition/Correction), S. Yang, A. Navrotsky, M. E. Davis, and L. F. Lee, *J. Phys. Chem. B*, 106, 5312 (2002).
- "Phonon, Spin-wave, and Defect Contributions to the Low-temperature Specific Heat of $\alpha\text{-FeOOH}$," J. Majzlan, A. Navrotsky, B. F. Woodfield, B. E. Lang, J. Boerio-Goates, and R. A. Fisher, *J. Low Temp. Phys.*, 130, 69-76 (2003).
- "Thermal Analyses of Bulk Amorphous Oxides and Silicates of Zirconium and Hafnium," S. V. Ushakov, C. E. Brown, A. Navrotsky, A. Demkov, C. Wang, and B. Y. Nguyen, *Mater. Res. Soc. Symp. Proc.*, 745, N141-T141 (2003).
- "Enthalpy of Formation of Cubic Ytria-Stabilized Zirconia," T. A. Lee, A. Navrotsky, and I. Molodetsky, *J. Mater. Res.*, 18, 908-918 (2003).

- "*In Situ* Calorimetric Study of the Hexagonal-to-Lamellar Phase Transformation in a Nanostructured Silica/Surfactant Composite," A. F. Gross, S. Yang, A. Navrotsky, and S. H. Tolbert, *J. Phys. Chem. B*, 107, 2709-2718 (2003).
- "Thermodynamics of Fe Oxides: Part I. Entropy at Standard Temperature and Pressure and Heat Capacity of Goethite (α -FeOOH), Lepidocrocite (γ -FeOOH), and Maghemite (γ -Fe₂O₃)," J. Majzlan, B. E. Lang, R. Stevens, A. Navrotsky, B. F. Woodfield, and J. Boerio-Goates, *Amer. Miner.*, 88, 846-854 (2003).
- "Thermodynamics of Fe Oxides: Part II. Enthalpies of Formation and Relative Stability of Goethite (α -FeOOH), Lepidocrocite (γ -FeOOH), and Maghemite (γ -Fe₂O₃)," J. Majzlan, K. D. Grevel, and A. Navrotsky, *Amer. Miner.*, 88, 855-859 (2003).
- "Thermochemistry of (Ge_xSi_{1-x})O₂ Zeolites," Q. H. Li, A. Navrotsky, F. Rey, and A. Corma, *Microporous Mesoporous Mater.*, 59, 177-183 (2003).
- "New Thermochemical Evidence on the Stability of Dickite vs. Kaolinite," C.I. Fialips, J. Majzlan, D. Beaufort, and A. Navrotsky, *Amer. Miner.*, 88, 837-845 (2003).
- "Synthesis, Characterization and Thermochemistry of K-Na-H₂O Jarosites," C. Drouet and A. Navrotsky, *Geochim. Cosmochim. Acta*, 67, 2063-2076 (2003).
- "Thermodynamics of CoO-MgO Solid Solutions," L. Wang, A. Navrotsky, R. Stevens, B. F. Woodfield, and J. Boerio-Goates, *J. Chem. Thermodyn.*, 35, 1151-1159 (2003).
- "Thermodynamics of the Goethite-Diaspore Solid Solution," J. Majzlan and A. Navrotsky, *Eur. J. Mineral.*, 15, 495-501 (2003).
- "Enthalpies of Formation of U-, Th-, Ce-brannerite: Implications for Plutonium Immobilization," K. B. Helean, A. Navrotsky, G. R. Lumpkin, M. Colella, J. Lian, R. C. Ewing, B. Ebbinghaus, and J. G. Catalano, *J. Nucl. Mater.*, 320, 231-244 (2003).
- "Aluminum in Magnesium Silicate Perovskite: Formation, Structure, and Energetics of Magnesium-Rich Defect Solid Solutions," A. Navrotsky, M. Schoenitz, H. Kojitani, H. Xu, J. Zhang, D. J. Weidner, and R. Jeanloz, *J. Geophys. Res. B*, 108, 2330, (2003).
- "Thermochemistry of Glasses Along the 2NdAlO₃ - 3SiO₂ Join," Y. Zhang, A. Navrotsky, J. A. Tangeman, and J. K. Richard Weber, *J. Phys.: Condens. Matter.*, 15, S2343-S2355 (2003).
- "Aluminum Substitution in MgSiO₃ Perovskite: Investigation of Multiple Mechanisms by ²⁷Al NMR," (Letter), J. F. Stebbins, H. Kojitani, M. Akaogi, and A. Navrotsky, *Amer. Miner.*, 88, 1161-1164 (2003).
- "Thermochemistry of Guest-free Melanophlogite," (Letter), A. Navrotsky, H. Xu, E. C. Moloy, and M. D. Welch, *Amer. Miner.*, 88, 1612-1614 (2003).
- "Energetics of Oxidation of RE-Si-Al-O-N Glasses," Y. Zhang, A. Navrotsky, D. Matusch, and H. Seifert, *J. Mater. Res.*, 18, 1607-1613 (2003).
- "Energetics of a Nanophase Zeolite Independent of Particle Size," Q. H. Li, S. Y. Yang, and A. Navrotsky, *Microporous Mesoporous Mater.*, 65, 137-143 (2003).
- "Thermochemistry of Glasses in the Y₂O₃-Al₂O₃-SiO₂ System," Y. Zhang and A. Navrotsky, *J. Am. Ceram. Soc.*, 86, 1727-1732 (2003).
- "A New Series of Oxygen-Deficient Perovskites in the NaTi_xNb_{1-x}O_{3-0.5x} System: Synthesis, Crystal Chemistry and Energetics," H. Xu, Y. Su, M. L. Balmer, and A. Navrotsky, *Chem. Mater.*, 15, 1872-1878 (2003).

- "On the Thermochemistry of the Solid Solution Between Jarosite and Its Chromate Analog," C. Drouet, D. Baron, and A. Navrotsky, *Amer. Miner.*, 88: Special Environmental Issue, 1949-1954 (2003).
- "Stability of Peroxide-containing Uranyl Minerals," K.-A. Hughes Kubatko, K. B. Helean, A. Navrotsky, and P. C. Burns, *Science*, 302, 1191-1193 (2003).
- "Calorimetric Study of Nickel Molybdate: Heat Capacity, Enthalpy and Gibbs Energy of Formation," M. Morishita and A. Navrotsky, *J. Am. Ceram. Soc.*, 86, 1927-1932 (2003).
- "Enthalpies of Formation of LaBO₃ Perovskites (B = Al, Ga, Sc and In)," J. Cheng and A. Navrotsky, *J. Mater. Res.*, 18, 2501-2508 (2003).
- "Enthalpies of Formation of Cerium Zirconate: (Ce,Zr)O₂ Fluorite and Ce₂Zr₂O₇ Pyrochlore," K. B. Helean, S. V. Ushakov, C. E. Brown, A. Navrotsky, J. Lian, R. C. Ewing, T. Lee, and R. Haire, *AIP Conference Proceedings*, 673 (Plutonium Futures—The Science), 286-287 (2003).
- "Energetics of Nanoparticle Oxides: Interplay Between Surface Energy and Polymorphism," A. Navrotsky, *Geochem. Trans.*, 4, 34-37 (2003).
- "Microstructure and Composition of a Ce-Pyrochlore: a Chemical Analog for PU-Pyrochlore," H. Xu, Y. Wang, L. Garvie, A. J. Laurence, R. L. Putnam, and A. Navrotsky, *AIP Conference Proceedings*, 673 (Plutonium Futures—The Science), 227-229 (2003).
- "Energetics of Magnesium, Strontium, and Barium Doped Lanthanum Gallate Perovskites," J. Cheng and A. Navrotsky, *J. Solid State Chem.*, 177, 126-133 (2004).
- "Study on Synthesis of TPA-silicalite-1 from Initially Clear Solutions of Various Base Concentrations by *In Situ* Calorimetry, Potentiometry, and SAXS," S. Y. Yang, A. Navrotsky, D. J. Wesolowski, and J. A. Pople, *Chem. Mater.*, 16, 210-219 (2004).
- "Thermodynamics of Iron Oxides: Part III. Enthalpies of Formation and Stability of Ferrihydrite (~Fe(OH)₃), Schwertmannite (~FeO(OH)_{3/4}(SO₄)_{1/8}), and ε-Fe₂O₃," J. Majzlan, A. Navrotsky, and U. Schwertmann, *Geochim. Cosmochim. Acta*, 68, 1049-1059 (2004).
- "Enthalpy of Formation of LiNiO₂, LiCoO₂ and their Solid Solution, LiNi_{1-x}Co_xO₂," M. J. Wang and A. Navrotsky, *Solid State Ionics*, 166, 167-173, (2004).
- "Effect of La and Y on Crystallization Temperatures of Hafnia and Zirconia," S. V. Ushakov, C. E. Brown, and A. Navrotsky, *J. Mater. Res.*, 19, 693-696, (2004).
- "Formation Enthalpies of Rare Earth Titanate Pyrochlores," K. B. Helean, S. V. Ushakov, C. E. Brown, A. Navrotsky, J. Lian, R. C. Ewing, J. M. Farmer, and L. A. Boatner, *J. Solid State Chem.*, 177, 1858-1866 (2004).
- "Thermochemistry of Jarosite-alunite and Natrojarosite-natroalunite Solid Solutions," C. Drouet, K. L. Pass, D. Baron, S. Draucker, A. Navrotsky, *Geochim. Cosmochim. Acta*, 68, 2197-2205 (2004).
- "Molecular Simulations of Anhydrous Na₆[Al₆Si₆O₂₄] Sodalite," E. C. Moloy, R. T. Cygan, F. Bonhomme, D. M. Teter, and A. Navrotsky, *Chem. Mater.*, 16, 2121-2133 (2004).
- "Prototype Sandia Octahedral Molecular Sieve (SOMS) Na₂Nb₂O₆·H₂O: Synthesis, Structure and Thermodynamic Stability," H. Xu, M. Nyman, T. M. Nenoff, and A. Navrotsky, *Chem. Mater.*, 16, 2034-2040 (2004).
- "Enthalpy of Formation of Cubic Ytria-stabilized Hafnia," T. A. Lee and A. Navrotsky, *J. Mater. Res.*, 19, 1855-1861 (2004).

- "Crystal Chemistry and Energetics of Pharmacosiderite-related Microporous Phases in the K_2O - Cs_2O - SiO_2 - TiO_2 - H_2O system," H. Xu, A. Navrotsky, M. Nyman, and T. M. Nenoff, *Microporous Mesoporous Mater.*, 72, 209-218 (2004).
- "Thermochemistry of the Alkali Rare-earth Double Phosphates, $A_3RE(PO_4)_2$," S. V. Ushakov, A. Navrotsky, J. M. Farmer, and L. A. Boatner, *J. Mater. Res.*, 19, 2165-2175 (2004).
- "Crystallization in Hafnia- and Zirconia-based Systems," S. V. Ushakov, A. Navrotsky, Y. Yang, S. Stemmer, K. Kukli, M. Ritala, M. A. Leskelä, P. Fejes, A. Demkov, C. Wang, B.-Y. Nguyen, D. Triyoso, and P. Tobin, *Phys. Status Solid B*, 241, 2268-2278 (2004).
- "Thermochemistry of Rare-earth Aluminate and Aluminosilicate Glasses," Y. Zhang and A. Navrotsky, *J. Non-Cryst. Solids*, 341, 141-151 (2004).
- "Enthalpies of Formation of Ge-zeolites: ITQ-21 and ITQ-22," Q. H. Li, A. Navrotsky, F. Rey, and A. Corma, *Microporous Mesoporous Mater.*, 74, 87-92 (2004).
- "Direct Measurement of Relative Partial Molar Enthalpy of SiO_2 in $SiO_2 - M_2O$ ($M=Li, Na, K, Cs$) Binary and $SiO_2 - CaO - Al_2O_3$ Ternary Melts," M. Morishita, A. Navrotsky, and M. C. Wilding, *J. Am. Ceram. Soc.*, 87, 1550-1555 (2004).
- "Energetic Clues to Pathways to Biomineralization: Precursors, Clusters, and Nanoparticles," A. Navrotsky, *Proc. Natl. Acad. Sci.*, 101, 12096-12101 (2004).
- "Thermodynamic Properties, Low-temperature Heat Capacity Anomalies, and Single Crystal X-ray Refinement of Hydronium Jarosite, $(H_3O)Fe_3(SO_4)_2(OH)_6$," J. Majzlan, R. Stevens, J. Boerio-Goates, B. F. Woodfield, A. Navrotsky, P. C. Burns, M. K. Crawford, and T. G. Amos, *Phys. Chem. Miner.*, 31, 518-531 (2004).
- "Non-thermal Calcination by Ultraviolet Irradiation in the Synthesis of Microporous Materials," A. N. Parikh, A. Navrotsky, Q. H. Li, C. K. Yee, M. L. Amweg, and A. Corma, *Microporous Mesoporous Mater.*, 76, 17-22 (2004).
- "Calorimetric Study: Surface Energetics and the Magnetic Transition in Nanocrystalline CoO ," L. Wang, K. Vu, A. Navrotsky, R. Stevens, B. F. Woodfield, and J. Boerio-Goates, *Chem. Mater.*, 16, 5394-5400 (2004).
- "Early-stage Reactions in Synthesis of TPA-silicalite-1: Studies by *in situ* Calorimetry, SAXS and pH Measurements," S. Yang and A. Navrotsky, *Chem. Mater.*, 16, 3682-3687 (2004).
- "Thermochemical Investigations of Zirconolite, Pyrochlore and Brannerite: Candidate Materials for the Immobilization of Plutonium," K. B. Helean, A. Navrotsky, J. Lian, and R. C. Ewing, *Mat. Res. Soc. Symp. Proc.*, 807 (Scientific Basis for Nuclear Waste Management XXVII), 297-302 (2004).
- "Correlation of Formation Enthalpies with Critical Amorphization Temperature for Pyrochlore and Monazite," K. B. Helean, A. Navrotsky, J. Lian, and R. C. Ewing, *Mat. Res. Soc. Symp. Proc.*, 824 (Scientific Basis for Nuclear Waste Management XXVIII), 279-285 (2004).
- "Environmental Nanoparticles," A. Navrotsky, in "Dekker Encyclopedia of Nanoscience and Nanotechnology," J. A. Schwarz and C. I. Contescu, Eds., *CRC Press*, 1147-1155 (2004).
- "Enthalpy of Formation of Yttria-doped Ceria," W. Chen, T. A. Lee, and A. Navrotsky, *J. Mater. Res.*, 20, 144-150 (2005).
- "Enthalpies of Formation of $LaMO_3$ Perovskites ($M = Cr, Fe, Co$ and Ni)," J. Cheng and A. Navrotsky, *J. Mater. Res.*, 20, 191-200 (2005).
- "Energy Crossovers in Nanocrystalline Zirconia," M. W. Pitcher, S. V. Ushakov, A. Navrotsky, B. F. Woodfield, G. Li, J. Boerio-Goates, and B. M. Tissue, *J. Am. Ceram. Soc.*, 88, 160-167 (2005).

- "Thermochemistry of Iron Manganese Oxide Spinel," S. Guillemet-Fritsch, A. Navrotsky, P. Tailhades, H. Coradin, and M. Wang, *J. Solid State Chem.*, 178, 106-113 (2005).
- "Energetics of $\text{La}_{1-x}\text{A}_x\text{CrO}_{3-\delta}$ Perovskites (A = Ca or Sr)," J. Cheng, and A. Navrotsky, *J. Solid State Chem.*, 178, 234-244 (2005).
- "Thermochemistry of Hydrotalcite-like Phases in the $\text{MgO-Al}_2\text{O}_3\text{-CO}_2\text{-H}_2\text{O}$ System: A Determination of Enthalpy, Entropy and Free Energy," R. K. Allada, A. Navrotsky, and J. Boerio-Goates, *Amer. Miner.*, 90, 329-335 (2005).
- "Perovskite Solid Solutions along the $\text{NaNbO}_3\text{-SrTiO}_3$ Join: Phase Transitions, Formation Enthalpies, and Implications for General Perovskite Energetics," H. Xu, A. Navrotsky, Y. Su, and L. Balmer, *Chem. Mater.*, 17, 1880-1886 (2005).
- "Thermochemistry of $\text{Li}_{1+x}\text{Mn}_{2-x}\text{O}_4$ ($0 \leq x \leq 1/3$) Spinel," M. Wang and A. Navrotsky, *J. Solid State Chem.*, 178, 1182-1189 (2005).
- " LiMO_2 (M = Mn, Fe, and Co): Energetics, Polymorphism and Phase Transformation," M. Wang and A. Navrotsky, *J. Solid State Chem.*, 178, 1230-1240 (2005).
- "Octahedral Microporous Phases $\text{Na}_2\text{Nb}_{2-x}\text{Ti}_x\text{O}_{6-x}(\text{OH})_x \cdot \text{H}_2\text{O}$ and their Related Perovskites: Crystal Chemistry, Energetics, and Stability Relations," H. Xu, A. Navrotsky, M. D. Nyman, and T. M. Nenoff, *J. Mater. Res.*, 20, 618-627 (2005).
- "Erratum to 'Enthalpy of Formation of LiNiO_2 , LiCoO_2 and their Solid Solution, $\text{LiNi}_{1-x}\text{Co}_x\text{O}_2$ ' [*Solid State Ionics*, 166 (2004) 167-173]," M. Wang and A. Navrotsky, *Solid State Ionics*, 176, 1181 (2005).
- "Thermochemistry of Yavapaiite $\text{KFe}(\text{SO}_4)_2$: Formation Decomposition," F. L. Forray, C. Drouet, and A. Navrotsky, *Geochim. Cosmochim. Acta*, 69, 2133-2140 (2005).
- "Surface Enthalpy of Goethite," L. Mazeina and A. Navrotsky, *Clays Clay Miner.*, 53, 113-122 (2005).
- "Thermochemistry of $\text{La}_{1-x}\text{Sr}_x\text{FeO}_{3-\delta}$ Solid Solutions ($0.0 \leq x \leq 1.0$, $0.0 \leq \delta \leq 0.5$)," J. Cheng, A. Navrotsky, X. D. Zhou, and H. U. Anderson, *Chem. Mater.*, 17, 2197-2207 (2005).
- "Thermochemistry of Hydrotalcite-like Phases Intercalated with CO_3^{2-} , NO_3^- , Cl^- , I^- , and ReO_4^- ," R. K. Allada, J. D. Pless, T. M. Nenoff, and A. Navrotsky, *Chem. Mater.*, 17, 2455-2459 (2005).
- "Jarosite Stability on Mars," A. Navrotsky, F. L. Forray, and C. Drouet, *Icarus*, 176, 250-253 (2005).
- "Enthalpy of Formation of Li_xCoO_2 ($0.5 \leq x \leq 1.0$)," M. Wang, A. Navrotsky, S. Venkatraman, and A. Manthiram, *J. Electrochem. Soc.*, 152, J82-J84 (2005).
- "Thermochemistry of a New Class of Materials Containing Dinitrogen Pairs in an Oxide Matrix," F. Tessier, L. Le Gendre, F. Chevire, R. Marchand, and A. Navrotsky, *Chem. Mater.*, 17, 3570-3574 (2005).
- "Thermodynamics of Monoclinic $\text{Fe}_2(\text{SO}_4)_3$," J. Majzlan, A. Navrotsky, R. Stevens, M. Donaldson, B. F. Woodfield, and J. Boerio-Goates, *J. Chem Thermodyn.*, 37, 802-809 (2005).
- "Energetics of Mesoporous Silica: Investigation into Pore Size and Symmetry," O. Trofymuk, A. A. Levchenko, S. H. Tolbert, and A. Navrotsky, *Chem. Mater.*, 17, 3772-3783 (2005).
- "Thermodynamics of Uranyl Minerals: Enthalpies of Formation of Rutherfordine, UO_2CO_3 , Andersonite, $\text{Na}_2\text{CaUO}_2(\text{CO}_3)_3(\text{H}_2\text{O})_5$, and Grimselite, $\text{K}_3\text{NaUO}_2(\text{CO}_3)_3\text{H}_2\text{O}$," K.-A. Hughes Kubatko, K. B. Helean, A. Navrotsky, and P. C. Burns, *Amer. Miner.*, 90, 1284-1290 (2005).
- "Thermochemistry of Framework Titanosilicate $\text{A}_2\text{TiSi}_6\text{O}_{15}$ (A = K, Rb, Cs)," H. Xu, A. Navrotsky, M. Nyman, and T. M. Nenoff, *J. Am. Ceram. Soc.*, 88, 1819-1825 (2005).

- “Heat Capacities and Absolute Entropies of UTi_2O_6 and $CeTi_2O_6$,” M. H. Donaldson, R. Stevens, B. E. Lang, J. Boerio-Goates, B. F. Woodfield, R. L. Putnam, and A. Navrotsky, *J. Therm. Anal. Calorim.*, **81**, 617-625 (2005).
- “Thermodynamic Properties of Magnesiochloritoid,” K. D. Grevel, W. A. Kahl, J. Majzlan, A. Navrotsky, C. Lathe, and T. Fockenber, *Eur. J. Mineral.*, **17**, 587-598 (2005).
- “A Simple Tool for Handling and Loading Capillary Tubes,” J. M. Neil and A. Navrotsky, *Powder Diffr.*, **20**, 259 (2005).
- “Direct Calorimetric Measurement of Enthalpies of Phase Transitions at 2000 – 2400 °C in Yttria and Zirconia,” A. Navrotsky, L. Benoist, and H. Lefebvre, *J. Am. Ceram. Soc.*, **88**, 2942-2944 (2005).
- “Formation Enthalpy of $ThSiO_4$ and Enthalpy of the Thorite → Huttonite Phase Transition,” L. Mazeina, S. V. Ushakov, A. Navrotsky, and L. Boatner, *Geochim. Cosmochim. Acta*, **69**, 4675-4683 (2005).
- “Crystal-chemical and Energetic Systematics of Wadeite-type Phases $A_2BSi_3O_9$ (A= K, Cs; B = Si, Ti, Zr),” H. Xu, A. Navrotsky, M. L. Balmer, and Y. Su, *Phys. Chem. Miner.*, **32**, 426-435 (2005).
- “Direct Measurement of Water Adsorption Enthalpy on Hafnia and Zirconia,” S. V. Ushakov and A. Navrotsky, *Appl. Phys. Lett.*, **87**, 164103 (2005).
- “Interfacial Effects on Vitrification of Confined Glass-forming Liquids,” O. Trofymuk, A. A. Levchenko, and A. Navrotsky, *J. Chem. Phys.*, **123**, 194509-194516 (2005).
- “Photochemical Template Removal and Spatial Patterning of Zeolite MFI Thin Films Using UV/Ozone Treatment,” A. N. Parikh, Q. H. Li, C. K. Yee, and A. Navrotsky, *Microporous Mesoporous Mater.*, **87**, 45-51 (2005).
- “Nitrate Cancrinite: Synthesis, Characterization, and Determination of the Enthalpy of Formation,” Q. Y. Liu, H. Xu, and A. Navrotsky, *Microporous Mesoporous Mater.*, **87**, 146-152 (2005).
- “Energetics of Self-assembly and Chain Confinement in Silver Alkanethiolates: Enthalpy-Entropy Interplay,” A. A. Levchenko, C. K. Yee, A. N. Parikh, and A. Navrotsky, *Chem. Mater.*, **17**, 5428-5438 (2005).
- “Energetics of Formation and Oxidation of Microporous Calcium Aluminates: a New Class of Electrides and Ionic Conductors,” O. Trofymuk, Y. Toda, H. Hosono, and A. Navrotsky, *Chem. Mater.*, **17**, 5574-5579 (2005).
- “Environmental Implications: Nanoparticle Geochemistry in Water and Air. Nanoparticles and the Environment,” A. Navrotsky, in “Nanotechnology and the Environment – Applications and Implications,” B. Karn, T. Masciangioli, W. X. Zhang, V. Colvin, and P. Alivisatos, Eds., *ACS Symposium Series*, **890**, 92-96 (2005).
- “Thermodynamics of Oxide Systems Relevant to Alternative Gate Dielectrics,” A. Navrotsky and S. V. Ushakov, in “Materials Fundamentals of Gate Dielectrics,” A. A. Demkov and A. Navrotsky, Eds., *Springer*, 57-108 (2005).
- “Calorimetric Insights into the Synthesis of Templated Materials,” A. Navrotsky, in “Current Opinion in Colloid and Interface Science,” *Elsevier*, **10**, 195-202 (2005).
- “Condensed Phases of Inorganic Materials: Ceramic Systems,” N. S. Jacobson, R. L. Putnam, and A. Navrotsky, in “Measurement of the Thermodynamic Properties of Multiple Phases,” R. D. Weir and Th. W. De Loos, Eds., *Experimental Thermodynamics*, *Elsevier*, **VII**, 309-325 (2005).
- “Thermochemical Insights into Refractory Ceramic Materials based on Oxides with Large Tetravalent Cations,” A. Navrotsky, *J. Mater. Chem.*, **15**, 1883-1890 (2005).

- "Competition of FAU and LTA in the Synthesis System (TMA, Na)₂O - Al₂O₃ - SiO₂ - H₂O," S. Yang, Q. Li, M. Wang, and A. Navrotsky, *Microporous Mesoporous Mater.*, 87, 261-267(2006).
- "Formation and Hydration Enthalpies of the Hydrosodalite Family of Materials," E. C. Moloy, Q. Y. Liu, and A. Navrotsky, *Microporous Mesoporous Mater.*, 88, 282-292 (2006).
- "Energetics of Cubic Si₃N₄," Y. Zhang, A. Navrotsky, and T. Sekine, *J. Mater. Res.*, 21, 41-44 (2006).
- "Effect of Structure and Thermodynamic Stability on the Response of Lanthanide Stannate Pyrochlores to Ion-Beam Irradiation," J. Lian, K. B. Helean, B. J. Kennedy, L. M. Wang, A. Navrotsky, and R. C. Ewing, *J. Phys. Chem. B.*, 110, 2343-2350 (2006).
- "Oxide Melt Solution Calorimetry of Sulfides: Enthalpy of Formation of Sphalerite, Galena, Greenockite and Hawleyite," S. Deore and A. Navrotsky, *Amer. Miner.*, 91, 400-403 (2006).
- "High-temperature Calorimetry of Zirconia: Heat Capacity and Thermodynamics of Monoclinic-tetragonal Phase Transition," Y. Moriya and A. Navrotsky, *J. Chem. Thermodyn.*, 38, 211-223 (2006).
- "Surface Energy and Thermodynamic Stability of γ -alumina: Effect of Dopants and Water," R. Castro, S. Ushakov, L. Gengembre, D. Gouvêa, and A. Navrotsky, *Chem. Mater.*, 18, 1867-1872 (2006).
- "Energetics of Bulk and Nano-akaganeite, β -FeOOH: enthalpy of Formation, Surface Enthalpy, and Enthalpy of Water Adsorption," L. Mazeina, S. Deore, and A. Navrotsky, *Chem. Mater.*, 18, 1830-1838 (2006).
- "Formation and Dehydration Enthalpy of Ion exchanged Zeolite Beta," P. Sun, S. Deore, and A. Navrotsky, *Microporous Mesoporous Mater.*, 91, 15-22 (2006).
- "Thermodynamics of Uranyl Minerals: Enthalpies of Formation of Uranyl Oxide Hydrates," K. A. Kubatko, K. Helean, A. Navrotsky, and P.C. Burns, *Amer. Miner.*, 91, 658-666 (2006).
- "Thermodynamic Properties and Crystal Structure Refinement of Ferricopiapite, Coquimbite, Rhomboclase, and Fe₂(SO₄)₃(H₂O)₅," J. Majzlan, A. Navrotsky, R. Blaine McCleskey, and C. N. Alpers, *Eur. J. Mineral.*, 18, 175-186 (2006).
- "Energetics of LiFePO₄ and Polymorphs of its Delithiated Form, FePO₄," R. G. Iyer, C. Delacourt, C. Masquelier, J.-M. Tarascon, and A. Navrotsky, *Electrochem. Solid-State Lett.*, 9, A46-A48 (2006).
- "Nickel Solubility and Precipitation in Soils: A Thermodynamic Study," E. Peltier, R. Allada, A. Navrotsky, and D. L. Sparks, *Clays Clay Miner.*, 54, 153-164 (2006).
- "Calorimetric Determination of the Enthalpies of Formation of Hydrotalcite-like Solids and Their Use in Geochemical Modeling of Metals in Natural Waters," R. K. Allada, E. Peltier, A. Navrotsky, W. H. Casey, A. Johnson, H. T. Berbeco, and D. L. Sparks, *Clays Clay Miner.*, 54, 409-417 (2006).
- "A Nanowire-Nanoparticle Crosslinking Approach to Highly Porous Electrically Conducting Solids," N. Akl, O. Trofymluk, X. B. Qi, J. Y. Kim, F. Osterloh, and A. Navrotsky, *Angew. Chem.*, 45, 3653-3656 (2006).
- "TiO₂ Stability Landscape: Polymorphism, Surface Energy and Bound Water Energetics," A. A. Levchenko, G. Li, J. Boerio-Goates, B. F. Woodfield, and A. Navrotsky, *Chem. Mater.*, 18, 6324-6332 (2006).
- "Energetics of Cancrinite: Effect of Salt Inclusion," Q. Y. Liu, A. Navrotsky, C. F. Jove-Colon, and F. Bonhomme, *Microporous Mesoporous Mater.*, 98, 227-233 (2006).
- "Energetics of Cobalt Phosphate Frameworks: α , β , and Red NaCoPO₄," S. N. Le, H. W. Eng, and A. Navrotsky, *J. Solid State Chem.*, 179, 3731-3738 (2006).

- "A Clathrate Reservoir Hypothesis for Enceladus' South Polar Plume," S. W. Kieffer, X. Lu, C. M. Bethke, J. R. Spencer, S. Marshak, and A. Navrotsky, *Science*, 314, 1764-1766 (2006).
- "Thermochemical Study of Trivalent-doped Ceria Systems: $\text{CeO}_2\text{-MO}_{1.5}$ ($M = \text{La, Gd, and Y}$)," W. Chen and A. Navrotsky, *J. Mater. Res.*, 21, 3242-3251 (2006).
- "Thermochemistry of Microporous and Mesoporous Materials," Q. Li, J. Wang, H. Yuan, L. Xie, L. Wang and A. Navrotsky, *Huaxue Jinzhan, Prog. Chem.*, 18, 680-686 (2006).
- "Membranes for H_2 Generation from Nuclear Powered Thermochemical Cycles," T. M. Nenoff, A. Ambrosini, T. J. Garino, K. Leung, M. Axness, F. Gelbard, R. G. Iyer, and A. Navrotsky, *Sandia Report*, SAND2006-7081 (2006).
- "Enthalpy of Formation and Dehydration of Lithium and Sodium Zeolite Beta," P. Sun, S. Deore, and A. Navrotsky, *Microporous Mesoporous Mater.*, 98, 29-40 (2006).
- "Investigation of SOMS and Their Related Perovskites," Y. Su, L. Li, T. M. Nenoff, M. D. Nyman, A. Navrotsky, and H. Xu, *ACS Symposium Series 943 (Nuclear Waste Management)*, 268-284 (2006).
- "Inorganic Nanoparticles — Unique Properties and Novel Applications," M. Asta, S. M. Kauzlarich, K. Liu, A. Navrotsky, and F. E. Osterloh, *Mat. Matters*, 2, 3-6 (2007).
- "The Local Environment of Trivalent Lanthanide Ions in Sodium Silicate Glasses: A Neutron Diffraction Study Using Isotopic Substitution," M. Wilding, Y. Badyal, and A. Navrotsky, *J. Non-Cryst. Solids*, 353, 4792-4800 (2007).
- "Energetics of Defect Fluorite and Pyrochlore Phases in Lanthanum and Gadolinium Hafnates," S. V. Ushakov, A. Navrotsky, J. A. Tangeman, and K. B. Helean, *J. Am. Ceram. Soc.*, 90, 1171-1176 (2007).
- "Calorimetric Measurements of Energetics of Defect Interactions in Fluorite Oxides," A. Navrotsky, P. Simoncic, H. Yokokawa, W. Q. Chen, and T. Lee, *Faraday Discuss.*, 134, 171-180 (2007).
- "Kinetic Model for TiO_2 Polymorphic Transformation from Anatase to Rutile," G. Madras, B. McCoy, and A. Navrotsky, *J. Am. Ceram. Soc.*, 90, 250-255 (2007).
- "Enthalpy of Water Adsorption and Surface Enthalpy of Lepidocrocite ($\gamma\text{-FeOOH}$)," J. Majzlan, L. Mazeina, and A. Navrotsky, *Geochim. Cosmochim. Acta*, 71, 615-623 (2007).
- "Energetics of Cerium-Zirconium Substitution in the $x\text{Ce}_{0.8}\text{Y}_{0.2}\text{O}_{1.9}\text{-(1-x)}\text{Zr}_{0.8}\text{Y}_{0.2}\text{O}_{1.9}$ System," W. Chen, A. Navrotsky, Y. P. Xiong, and H. Yokokawa, *J. Am. Ceram. Soc.*, 90, 584-589 (2007).
- "Heats of Formation for Several Crystalline Polymorphs and Pressure-Induced Amorphous Forms of AMo_2O_8 ($A = \text{Zr, Hf}$) and ZrW_2O_8 ," T. Varga, C. Lind, A. P. Wilkinson, H. Xu, C. E. Lesher, and A. Navrotsky, *Chem. Mater.*, 19, 468-476 (2007).
- "Enthalpy of Water Adsorption and Surface Enthalpy of Goethite ($\alpha\text{-FeOOH}$) and Hematite ($\alpha\text{-Fe}_2\text{O}_3$)," L. Mazeina and A. Navrotsky, *Chem. Mater.*, 19, 825-833 (2007).
- "Thermodynamic Properties of Sodydyite from Solubility and Calorimetry Measurements," D. Gorman-Lewis, L. Mazeina, J. Fein, J. Szymanowski, P. Burns, and A. Navrotsky, *J. Chem. Thermodyn.*, 39, 568-575 (2007).
- "Enthalpies of Formation of Rare Earth Orthovanadates, REVO_4 ," M. Dorogova, A. Navrotsky, and L. A. Boatner, *J. Solid State Chem.*, 180, 847-851 (2007).
- "Application of Calorimetry on a Chip to High Pressure Materials," A. Navrotsky, M. Dorogova, F. Hellman, D. W. Cooke, B. L. Zink, C. E. Lesher, J. Boerio-Goates, B. F. Woodfield, and B. Lang, *Proc. Natl. Acad. Sci.*, 104, 9187-9191 (2007).

- "Synthesis of Nitrate Sodalite: An *In Situ* Scanning Calorimetric Study," Q. Liu and A. Navrotsky, *Geochim. Cosmochim. Acta*, 71, 2072-2078 (2007).
- "Thermochemistry and Melting Properties of Basalt," M. A. Bouhifd, P. Besson, P. Courtial, C. Gérardin, A. Navrotsky, and P. Richet, *Contrib. Mineral. Petrol.*, 153, 689-698 (2007).
- "Systematics of Phase Transition and Mixing Energetics in Rare Earth, Yttrium and Scandium Stabilized Zirconia and Hafnia," P. Simoncic and A. Navrotsky, *J. Am. Ceram. Soc.*, 90, 2143-2150 (2007).
- "Elastic Properties of Yttrium-Doped BaCeO₃ Perovskite," J. Zhang, Y. Zhao, H. Xu, B. Li, D. J. Weidner, and A. Navrotsky, *Appl. Phys. Lett.*, 90, 161903/1-161903/3 (2007).
- "Compressibility and Pressure-Induced Amorphization of Guest-Free Melanophlogite: an *in situ* Synchrotron X-ray Diffraction Study," H. Xu, J. Zhang, Y. Zhao, G. D. Guthrie, D. D. Hickmott, and A. Navrotsky, *Am. Mineral.*, 92, 166-173 (2007).
- "Thermochemistry of A₂M₃O₁₂ Negative Thermal Expansion Materials," T. Varga, J. L. Moats, S. V. Ushakov, and A. Navrotsky, *J. Mater. Res.*, 22, 2512-2521 (2007).
- "Kinetic and Thermodynamic Studies of Silica Nanoparticle Solution," J. D. Rimer, O. Trofymlyuk, A. Navrotsky, R. F. Lobo, and D. G. Vlachos, *Chem. Mater.*, 19, 4189-4197 (2007).
- "Energetics of CdS_xSe_{1-x} Quantum Dots in Borosilicate Glasses," R. M. Morcos, C. Mitterbauer, N. Browning, S. Risbud, and A. Navrotsky, *J. Non-Cryst. Solids*, 353, 2785-2795 (2007).
- "Thermodynamically Stable Si_xO_yC_z Polymer-Like Amorphous Ceramics," T. Varga, A. Navrotsky, J. L. Moats, R. M. Morcos, F. Poli, K. Müller, A. Saha, and R. Raj, *J. Am. Ceram. Soc.*, 90, 3213-3219 (2007).
- "Hierarchically Assembled Porous ZnO Nanoparticles: Synthesis, Surface Energy, and Photocatalytic Activity," F. Xu, P. Zhang, A. Navrotsky, Z.-Y. Yuan, T.-Z. Ren, M. Halasa, and B.-L. Su, *Chem. Mater.*, 19, 5680-5686 (2007).
- "Surface Enthalpies of Nanophase ZnO with Different Morphologies," P. Zhang, F. Xu, A. Navrotsky, J. S. Lee, S. Kim, and J. Liu, *Chem. Mater.*, 19, 5687-5693 (2007).
- "Dynamics of Water Confined on a TiO₂ (Anatase) Surface," A. A. Levchenko, A. I. Kolesnikov, N. L. Ross, J. Boerio-Goates, B. F. Woodfield, G. Li, and A. Navrotsky, *J. Phys. Chem.*, 111, 12584 -12588 (2007).
- "Atmospheric Pressure Synthesis of Heavy Rare Earth Sesquioxides Nanoparticles of the Uncommon Monoclinic Phase," B. Guo, A. S. Harvey, J. Neil, I. M. Kennedy, A. Navrotsky, and S. H. Risbud, *J. Am. Ceram. Soc.*, 90, 3683-3686 (2007).
- "The Energetics of Hematite Dissolution in Iron Oxide Rich Melts: *In Situ* High Temperature Calorimetric Studies," R. M. Morcos, B. G. Ellis, and A. Navrotsky, *Amer. Miner.*, 92, 1064-1070 (2007).
- "Energetics of Rare Earth-doped Hafnia," P. Simoncic and A. Navrotsky, *J. Mater. Res.*, 22, 876-885 (2007).
- "Inorganic Nanoparticles – Unique Properties and Novel Applications," M. Asta, S. M. Kauzlarich, K. Liu, A. Navrotsky, and F. E. Osterloh, *Mater. Matters*, 2, 3-6 (2007).
- "Chemical Thermodynamics of Solid Solutions of Interest in Nuclear Waste Management," J. Bruno, D. Bosbach, D. Kulik, and A. Navrotsky, *OECD Pub.*, 10, (2007).
- "Calorimetry of Nanoparticles, Surfaces, Interfaces, Thin Films, and Multilayers," A. Navrotsky, *J. Chem. Thermodyn.*, 39, 2-9 (2007).

- "Characterization of Chemical Properties, Unit Cell Parameters and Particle Size Distribution of Three Zeolite Reference Materials: RM 8850- zeolite Y, RM 8851 – zeolite A and RM 8852 – ammonium ZSM-5 zeolite," S. Turner, J. R. Sieber, T. W. Vetter, R. Zeisler, A. F. Marlow, M. G. Moreno-Ramirez, M. E. Davis, G. J. Kennedy, W. G. Borghard, S. Yang, A. Navrotsky, B. H. Toby, J. F. Kelly, R. A. Fletcher, E. S. Windsor, J. R. Verkouteren, and S. D. Leigh, *Microporous Mesoporous Mater.*, 107, 252-267 (2008).
- "High Temperature Calorimetric Studies of Heat of Solution of NiO, CuO, La₂O₃, TiO₂, HfO₂ in Sodium Silicate Liquids," Y. Linard, M. C. Wilding, and A. Navrotsky, *Geochim. Cosmochim. Acta.*, 72, 590-601 (2008).
- "Enthalpy of Formation and Dehydration of Alkaline Earth Cation Exchanged Zeolite Beta," P. Sun and A. Navrotsky, *Microporous Mesoporous Mater.*, 109, 147-155 (2008).
- "Molecular Mechanics Studies of Thionin Blue in Zeolite Mordenite," S. Deore, P. Simoncic, and A. Navrotsky, *Microporous Mesoporous Mater.*, 109, 342-349 (2008).
- "Energetics of Phosphate Frameworks Containing Zinc and Cobalt: NaZnPO₄, NaZnPO₄•4/3H₂O, and NaCO_xZn_{1-x}PO₄•4/3H₂O," S.-N. Le and A. Navrotsky, *J. Solid State Chem.*, 181, 20-29 (2008).
- "Calorimetric Determination of Energetics of Solid Solutions of UO_{2+x} with CaO and Y₂O₃," L. Mazeina, A. Navrotsky, and M. Greenblatt, *J. Nucl. Mater.*, 373, 39-43 (2008).
- "Grain-growth Controlled Giant Permittivity in Soft Chemistry CaCu₃Ti₄O₁₂ Ceramics," L. Marchin, A. A. Levchenko, S. Guillemet-Fritsch, A. Navrotsky, B. Durand, and T. Lebey, *J. Am. Ceram. Soc.*, 91, 485-489 (2008).
- "Enthalpy of Formation of Sulfate Green Rusts, Fe^{II}_{1-x}Fe^{III}_x(OH)_{2+x-2y}(SO₄)_y.nH₂O," L. Mazeina, A. Navrotsky, and D. Dyar, *Geochim. Cosmochim. Acta.*, 72, 1143-1153 (2008).
- "Calorimetric Study of Maghemite Nanoparticles Synthesized by Laser-induced Pyrolysis," O. Bomati-Miguel, L. Mazeina, A. Navrotsky, and S. Veintemillas-Verdaguer, *Chem. Mater.*, 20, 591-598 (2008).
- "Constraint of Oxygen Fugacity During Field-Assisted Sintering: TiO₂ as a Test Case," D. V. Quach, A. A. Levchenko, A. Navrotsky, and J. R. Groza, *J. Am. Ceram. Soc.*, 91, 970-974 (2008).
- "Formation and Dehydration Enthalpy of Gallosilicate Zeolites," P. Sun and A. Navrotsky, *Microporous Mesoporous Mater.*, 111, 507-516 (2008).
- "Energetics of La₂O₃-HfO₂-SiO₂ Glasses," R. M. Morcos, J. Tangeman, S. Ushakov, and A. Navrotsky, *J. Am. Ceram. Soc.*, 91, 1088-1094 (2008).
- "High Temperature Properties of Rb₃H(SO₄)₂ at Ambient Pressure: Absence of a Superprotonic Transition," L. A. Cowan, R. M. Morcos, A. Navrotsky, N. Hatada, and S. M. Haile, *Solid State Ionics*, 179, 305-313 (2008).
- "Energetics of Cubic and Monoclinic Yttrium Oxide Polymorphs: Phase Transitions, Surface Enthalpies, and Stability at the Nanoscale," P. Zhang and A. Navrotsky, *J. Phys. Chem.*, 112, 932-938 (2008).
- "Oxide-Melt Solution Calorimetry of Selenides: Enthalpy of Formation of Zinc, Cadmium and Lead Selenide," S. Deore, F. Xu, and A. Navrotsky, *Amer. Miner.*, 93, 779-783 (2008).
- "Energetics of ZnO Nanoneedles: Surface Enthalpy, Stability, and Growth," P. Zhang, T. Lee, F. Xu, and A. Navrotsky, *J. Mater. Res.*, 26, 1652-1657 (2008).
- "Thermodynamically Stable Si_wC_xN_yO_z Polymer-Like, Amorphous Ceramics Made from Organic Precursors," R. M. Morcos, A. Navrotsky, T. Varga, D. Ahn, A. Saha, F. Poli, K. Müller, and Rishi Raj. *J. Am. Chem. Soc.*, 91, 2391-2393 (2008).

- "Energetics of $\text{Si}_x\text{O}_y\text{C}_z$ Polymer-Derived Ceramics Prepared Under Varying Conditions" R. M. Morcos, A. Navrotsky, T. Varga, Y. Blum, D. Ahn, F. Poli, K. Müller, and R. Raj, *J. Am. Ceram. Soc.*, 91, 2969-2974 (2008).
- "Does Dirt Burn? Application of Scanning Calorimetry to Estimate Soil Organic Matter Loss after Fires" S. V. Ushakov, D. Nag, and A. Navrotsky, *Proceedings of 36th North American Thermal Analysis Society Conference*, Aug 16-17, 2008, Atlanta, GA (2008).
- "Energetics of Copper Diphosphates – $\text{Cu}_2\text{P}_2\text{O}_7$ and $\text{Cu}_3(\text{P}_2\text{O}_6\text{OH})_2$," S.-N. Le, A. Navrotsky, and V. Pralong, *Solid State Sci.*, 10, 761-767 (2008).
- "Thermochemistry of Nanoparticles on a Substrate: Zinc Oxide on Amorphous Silica" T. Y. Shvareva, S. V. Ushakov, A. Navrotsky, J. A. Libera, and J. W. Elam, *J. Mater. Res.*, 23, 1907-1912 (2008).
- "Enthalpy of Formation of the Cubic Fluorite Phase in the Ceria-Zirconia System," T. Lee, C. Stanek, K. McClellan, J. Mitchell, and A. Navrotsky *J. Mater. Res.*, 23, 1105-1112 (2008).
- "Thermodynamic Properties of $\text{CaTh}(\text{PO}_4)_2$ Synthetic Cheralite," K. Popa, T. Shvareva, L. Mazeina, E. Colineau, F. Wastin, R. J. M. Konings, and A. Navrotsky, *Amer. Miner.*, 93, 1356-1362 (2008).
- "Enthalpy of Formation of Carbon-Rich Polymer-Derived Amorphous SiCN Ceramics" R. M. Morcos, G. Mera, A. Navrotsky, T. Varga, R. Riedel, F. Poli, and K. Müller, *J. Am. Ceram. Soc.*, 91, 3349-3354 (2008).
- "Direct Visualization of Phase Transition Dynamics in Binary Supported Phospholipid Bilayers Using Imaging Ellipsometry," A. W. Szmodis, C. D. Blanchette, A. Levchenko, A. Navrotsky, C. A. Orme, M. L. Longo, and A. N. Parikh, *Soft Matter*, 4, 1161-1164 (2008).
- "Energetics of Formation of Alkali and Ammonium Cobalt and Zinc Phosphate Frameworks," S.-N. Le and A. Navrotsky, *J. Solid State Chem.*, 181, 20-29 (2008).
- "Calorimetric Study of $\text{CaCu}_3\text{Ti}_4\text{O}_{12}$ - A Ceramic with Giant Permittivity," A. A. Levchenko, L. Marchin, Y. Moriya, H. Kawaji, T. Atake, S. Guillemet-Fritsch, B. Durand, and A. Navrotsky, *J. Mater. Res.*, 26, 1522-1531 (2008).
- "Thermodynamics of Silica Nanoparticle Self-Assembly in Basic Solutions of Monovalent Cations," J. D. Rimer, O. Trofymuk, R. F. Lobo, A. Navrotsky, and D. G. Vlachos, *J. Phys. Chem. C.*, 112, 14754-14761 (2008).
- "Thermodynamic Properties of Feroxyhyte (δ' -FeOOH)," J. Majzlan, C. B. Koch, and A. Navrotsky. *Clays Clay Miner.*, 56, 526-530 (2008).
- "Comparison of Chiral and Racemic forms of Zinc Cyclohexane trans-1,2-dicarboxylate Frameworks; A Structural, Computational and Calorimetric Study" A. J. Bailey, C. Lee, R. K. Feller, J. B. Orton, C. Mellot-Draznieks, B. Slater, W. T. A. Harrison, P. Simoncic, A. Navrotsky, M. C. Gossel, and A. K. Cheetham, *Angew. Chem. Int. Ed.*, 47, 8634-8637 (2008).
- "Size-Driven Structural and Thermodynamic Complexity in Iron Oxides," A. Navrotsky, L. Mazeina, and J. Majzlan, *Science*, 319, 1635-1638 (2008).
- "Materials Science of High-Level Nuclear Waste Immobilization," W. J. Weber, A. Navrotsky, S. Stefanovsky, E. R. Vance, and E. Vernaz, *Mat. Res. Soc. Bull.*, 34, 46-53 (2009).
- "Thermochemistry of Microporous and Mesoporous Materials" A. Navrotsky, O. Trofymuk, and A. Levchenko, *Chem. Rev.*, 109, 3885-3902 (2009).
- "Energetics of Oxide Nanoparticles" A. Navrotsky, *Int. J. Quantum Chem.*, 109, 2647-2657 (2009).

- “Surface Enthalpy, Enthalpy of Water Adsorption, and Phase Stability in Nanocrystalline Monoclinic Zirconia,” A. V. Radha, O. Bomati-Miguel, S. V. Ushakov, A. Navrotsky, and P. Tartaj, *J. Am. Ceram. Soc.*, 92, 133-140 (2009).
- “Heat Capacities and Thermodynamic Functions of TiO₂ Anatase and Rutile: Analysis of Phase Stability,” S. J. Smith, R. Stevens, S. Liu, G. Li, A. Navrotsky, J. Boerio-Goates, and B. F. Woodfield, *Amer. Miner.*, 94, 236-243 (2009).
- “Formation and Dehydration Enthalpies of Gallosilicate Materials with Different Framework Topologies and Ga Contents,” W. Zhou, P. Sun, A. Navrotsky, S. H. Kim, and S. B. Hong, *Microporous Mesoporous Mater.*, 121, 200-207 (2009).
- “Direct Calorimetric Measurement of Grain Boundary and Surface Enthalpies in Ytria Stabilized Zirconia,” S. Chen, H. J. Avila-Paredes, S. Kim, J. Zhao, Z. Munir, and A. Navrotsky, *Phys. Chem. Chem. Phys.*, 11, 3039-3042 (2009).
- “Iron Ore Sintering: Characterization by Calorimetry and Thermal Analysis,” R. M. Morcos and A. Navrotsky, *J. Therm. Anal. Calorim.*, 96, 353-341 (2009).
- “The Crystallization of Ba-Substituted CsTiSi₂O_{6.5} Pollucite Using CsTiSi₂O_{6.5} Seed Crystals,” T. Nenoff, T. Garino, A. Navrotsky, and T.-J. Park, *J. Am. Ceram. Soc.*, 92, 2144-2146 (2009).
- “Thermochemistry and Aqueous Durability of Ternary Glass Forming Ba-Titanosilicates: Fresnoite (Ba₂TiSi₂O₈) and Ba-Titanite (BaTiSiO₅),” T.-J. Park, M. J. Davis, P. Vullo, T. M. Nenoff, J. L. Krumhansl, and A. Navrotsky, *J. Am. Ceram. Soc.*, 92, 2053-2058 (2009).
- “Thermochemistry of a Synthetic Na-Mg Rich Triple-Chain Silicate: Determination of Thermodynamic Variables,” B. E. Ams, D. M. Jenkins, J. Boerio-Goates, R. M. Morcos, A. Navrotsky, and K. Bozhilov, *Amer. Miner.*, 94, 1242-1254 (2009).
- “A Correlation Between the Ionic Conductivities and the Formation Enthalpies of Trivalent-Doped Ceria at Relatively Low Temperatures,” H. J. Avila-Paredes, T. Shvareva, W. Chen, A. Navrotsky, and S. Kim, *Phys. Chem. Chem. Phys.*, 11, 8580-8585 (2009).
- “Thermochemistry of Glass Forming Y-substituted Sr-analogues of Titanite (SrTiSiO₅),” T.-J. Park, S. Li, and A. Navrotsky, *J. Mater. Res.*, 24, 3380-3386 (2009).
- “Thermochemistry of Lanthanum Zirconate Pyrochlore,” A. V. Radha, S. V. Ushakov, and A. Navrotsky, *J. Mater. Res.*, 24, 3350-3357 (2009).
- “Enthalpies of Formation of CdS_xSe_{1-x} Solid Solutions,” F. Xu, X. Ma, S. M. Kauzlarich, and A. Navrotsky, *J. Mater. Res.*, 24, 1368-1374 (2009).
- “Inelastic Neutron Scattering Study of Confined Surface Water on Rutile Nanoparticles,” E. C. Spencer, A. Levchenko, N. L. Ross, A. I. Kolesnikov, J. Boerio-Goates, B. F. Woodfield, A. Navrotsky, and G. Li. *J. Phys. Chem. A*, 113, 2796-2800 (2009).
- “Structure, Heat Capacity and High Temperature Thermal Properties of Yb₁₄Mn_{1-x}Al_xSb₁₁,” C. A. Cox, E. S. Toberer, A. A. Levchenko, S. R. Brown, G. J. Snyder, A. Navrotsky, and S. M. Kauzlarich, *Chem. Mater.*, 21, 1354-1360 (2009).
- “Monoclinic to Tetragonal Transformations in Hafnia and Zirconia: A Combined Density Functional Theory and Calorimetric Study,” X. Luo, W. Zhou, S. V. Ushakov, A. Navrotsky, and A. A. Demkov, *Phys. Rev. B*, 80, 134119 (2009).
- “Phase Selection and Energetics in Chiral Alkaline Earth Tartrates and their Racemic and Meso Analogues; Synthetic, Structural, Computational and Calorimetric Studies,” L. Appelhans, M. Kosa, A. V. Radha, P. Simoncic, A. Navrotsky, M. Parrinello, and A. K. Cheetham, *J. Am. Chem. Soc.*, 131, 15375-15386 (2009).

"A Versatile Low Temperature Synthetic Route to the Zintl Phase Precursors: Na_4Si_4 , Na_4Ge_4 and K_4Ge_4 as Examples," X. Ma, F. Xu, T. Atkins, A. M. Goforth, D. Neiner, A. Navrotsky, and S. M. Kauzlarich, *Dalton Trans.*, 46, 10250-10255 (2009).

"The New High-Temperature Setaram AlexSYS Calorimeter and Thermochemistry of Alpha- CuMnO_4 ," A. Levchenko, L. Marchin, P. L. Parlouer, and A. Navrotsky, *ITAS Bulletin*, 2, 91-97 (2009).

"Thermodynamic Properties of Autunite, Uranyl Hydrogen Phosphate, and Uranyl Orthophosphate from Solubility and Calorimetric Measurements," D. Gorman-Lewis, T. Shvareva, K. Kubatko, P. C. Burns, D. M. Wellman, B. McNamara, J. E. S. Szymanowski, A. Navrotsky, and J. B. Fein, *Environ. Sci. Technol.*, 43, 7416-7422 (2009).

"Fluorite and Pyrochlore Phases in the HfO_2 - La_2O_3 - Gd_2O_3 Systems: Characterization and Calorimetric Study of Samples Quenched from Melts Formed by Laser Heating and Aerodynamic Levitation," S. V. Ushakov, A. Navrotsky, and J. A. Tangeman, *Mater. Res. Soc. Symp. Proc.*, 1122, 11-16 (2009).

"Surface Energy of Pure and Doped Tin Oxide," Castro, R. H. R., Hidalgo, P., Gouvea, D., and Navrotsky, A., *Cerâmica*, 55, 342-348 (2009).

"Calorimetric Study of the Surface Energy of Forsterite," S. Chen and A. Navrotsky, *Amer. Miner.*, 95, 112-117 (2010).

"Synthesis, Characterization and Thermochemistry of a Pb-jarosite," F. L. Forray, A. M. L. Smith, C. Drouet, A. Navrotsky, K. Wright, K. A. Hudson-Edwards, and W. E. Dubbin, *Geochim. Cosmochim. Acta*, 74, 215-224 (2010).

"Modified Polyol-Mediated Synthesis and Consolidation of Gd-Doped Ceria Nanoparticles," S. Wang, S. Chen, A. Navrotsky, M. Martin, S. Kim, and Z. Munir, *Solid State Ionics*, 181, 372-378 (2010).

"Calorimetric Measurement of Surface and Interface Enthalpies of Ytria Stabilized Zirconia (YSZ)," G. C. C. Costa, S. V. Ushakov, R. Castro, A. Navrotsky, and R. Muccillo, *Chem. Mater.*, 22, 2937-2945 (2010).

"Enthalpies of Formation of Pyrrhotite $\text{Fe}_{1-0.125x}\text{S}$ ($0 \leq x \leq 1$) Solid Solutions," A. Navrotsky and F. Xu, *Amer. Miner.*, 95, 717-723 (2010).

"Thermochemistry and Crystallization of Glass Forming Y-substituted Sr-analogues of Fresnoite ($\text{Sr}_2\text{TiSi}_2\text{O}_8$)," T.-J. Park and A. Navrotsky, *J. Am. Ceram. Soc.*, 93, 2055-2061 (2010).

"Nature of Molecular Rotation in Supercooled Glycerol Under Nanoconfinement," A. A. Levchenko, J. Pragati, O. Trofymuk, P. Yu, A. Navrotsky, and S. Sen, *J. Phys. Chem. B*, 114, 3070-3074 (2010).

"Hafnia: Energetics of Thin Films and Nanoparticles," W. Zhou, S. V. Ushakov, T. Wang, J. G. Ekerdt, A. A. Demkov, and A. Navrotsky, *J. Appl. Phys.*, 107, 1-7 (2010).

"Synthesis and Calorimetric Studies of Oxide Multilayer Systems: SOFC Cathode and Electrolyte Materials," N. Kemik, S. V. Ushakov, N. Schichtel, C. Kortec, Y. Takamura, and A. Navrotsky, *J. Vac. Sci. Technol. B*, 28, C5A1-C5A5 (2010).

"Thermochemistry of Gallosilicate Zeolites with the NAT Topology: an Energetic View on their In Situ Disorder-Order Transformation and Thermal Stability," W. Zhou, A. Navrotsky, J. Shin, and S. B. Hong, *Microporous and Mesoporous Mater.*, 135, 197-200 (2010).

"Transformation and Crystallization Energetics of Synthetic and Biogenic Amorphous Calcium Carbonate," A. V. Radha, T. Forbes, C. E. Killian, P. U. P. A. Gilbert, and A. Navrotsky, *Proc. Natl. Acad. Sci.*, 107, 16438-16443 (2010).

"Nanophase Transition Metal Oxides Show Large Thermodynamically Driven Shifts in Oxidation-Reduction Equilibria," A. Navrotsky, C. Ma, K. Lilova, and N. Birkner, *Science*, 330, 199-201 (2010).

"Thermochemistry of Lanthana and Yttria Doped Thoria," M. Aizenshtein, T. Y. Shvareva, and A. Navrotsky, *J. Am. Ceram. Soc.*, 93, 4142-4147 (2010).

"Shape-Dependent Surface Energetics of Nanocrystalline TiO₂," T.-J. Park, A. Levchenko, H. Zhou, S. Wong, and A. Navrotsky, *J. Mater. Chem.*, 20, 8639-8645 (2010).

"The Energetics of Lanthanum Tantalate Materials," T. Forbes, M. Nyman, M. A. Rodriguez, and A. Navrotsky, *J. Solid State Chem.*, 183, 2516-2521 (2010).

"First-principles Computational Study of Defect Clustering in Solid Solutions of ThO₂ with Trivalent Oxides," V. Alexandrov, N. Grønbech-Jensen, A. Navrotsky, and M. Asta, *Phys. Rev. B*, 82, 174115, 1-8 (2010).

"Calorimetric Study of Heats of Mixing in Sn_xTi_{1-x}O₂ Rutile Solid Solutions," Y. Ma and A. Navrotsky, *J. Am. Ceram. Soc.*, 93, 3432-3436 (2010).

"Thermodynamics of CoAl₂O₄-CoGa₂O₄ Solid Solutions," K. Lilova, A. Navrotsky, B. C. Melot, and R. Seshadri, *J. Solid State Chem.*, 183, 1266-1271 (2010).

"Thermodynamics of Solid Electrolytes and Related Oxide Ceramics Based on the Fluorite Structure," A. Navrotsky, *J. Mater. Chem.*, 20, 10577-10587 (2010).

"Heat Capacity Studies of the Iron Oxyhydroxides Akaganéite (β-FeOOH) and Lepidocrocite (γ-FeOOH)," C. L. Snow, S. J. Smith, B. E. Lang, Q. Shi, J. Boerio-Goates, B. Woodfield, and A. Navrotsky, *J. Chem. Thermodyn.*, 43, 190-199 (2010).

"Energetics of Single-Wall Carbon Nanotubes: Insights from Calorimetry and Neutron Scattering," A. A. Levchenko, A. Kolesnikov, O. Trofymuk, and A. Navrotsky, *Carbon*, 49, 949-954 (2010).

"²⁹Si and ¹³C Solid-State NMR Spectroscopic Study of Nanometer-Scale Structure and Mass Fractal Characteristics of Amorphous Polymer Derived Silicon Oxycarbide Ceramics," S. Widgeon, S. Sen, G. Mera, R. Riedel, and A. Navrotsky, *Chem. Mater.*, 22, 6221-6228 (2010).

"Controllable Morphology of Engelhard Titanium Silicates ETS-4: Synthetic, Photocatalytic and Calorimetric Studies," Y.-Q. Zhang, W. Zhou, S. Liu, and A. Navrotsky, *Chem. Mater.*, 23, 1166-1173 (2011).

"Enthalpy of Formation of Zinc Acetate Dihydrate," J. Hughes and A. Navrotsky, *J. Chem. Thermodyn.*, 43, 980-982 (2011).

"Heat Capacity of Hafnia at Low Temperature," W. Zhou, Q. Shi, B. F. Woodfield, and A. Navrotsky, *J. Chem. Thermodyn.*, 43, 970-973 (2011).

"Application of Scanning Calorimetry to Estimate Soil Organic Matter Loss After Fires," S. V. Ushakov, N. Divya, and A. Navrotsky, *J. Therm. Anal. Calorim.*, 104, 351-356 (2011).

"Thermochemistry of Proton Containing Borosilicate, Aluminosilicate and Gallosilicate Zeolite Beta," W. Zhou, P. Sun, P. Zhang, and A. Navrotsky, *Microporous Mesoporous Mater.*, 142, 749-753 (2011).

"Direct Measurements of Fusion and Phase Transition Enthalpies in Lanthanum Oxide," S. V. Ushakov, and A. Navrotsky, *J. Mater. Res.*, 26, 845-847 (2011).

"The Energetics of La₄LiAuO₈," T. Z. Forbes, J. A. Kurzman, R. Seshadri, and A. Navrotsky, *J. Mater. Res.*, 26, 1188-1192 (2011).

"Surface Enthalpy and Enthalpy of Water Adsorption of Nanocrystalline Tin Dioxide: Thermodynamic Insight on the Sensing Activity," Y. Ma, R. H. R. Castro, W. Zhou, and A. Navrotsky, *J. Mater. Res.*, 26, 848-853 (2011).

- “Cadmium Selenide: Surface and Nanoparticle Energetics,” F. Xu, W. Zhou, and A. Navrotsky, *J. Mater. Res.*, 26, 720-725 (2011).
- “MOF-5: Enthalpy of Formation and Energy Landscape of Porous Materials,” J. Hughes and A. Navrotsky, *J. Amer. Chem. Soc.*, 133, 9184-9187 (2011).
- “Synthesis and Thermochemistry of Relaxor Ferroelectrics in the Lead Magnesium Niobate-Lead Titanate (PMN-PT) Solid Solution Series,” G. C. C. Costa, L. Wu, and A. Navrotsky, *J. Mater. Chem.*, 21, 1837-1845 (2011).
- “Grain Boundary Enthalpies of Cubic Yttria - Stabilized Zirconia,” S. Chen, G. C. C. Costa, S. Wang, Z. A. Munir, S. Kim, and A. Navrotsky, *J. Am. Ceram. Soc.*, 94, 2181-2184 (2011).
- “The Effect of Vacancy and Barium Substitution on the Stability of the Cesium Titanium Silicate Pollucite,” T.-J. Park, T. J. Garino, T. M. Nenoff, D. Rademacher, and A. Navrotsky, *J. Am. Ceram. Soc.*, 94, 3053-3059 (2011).
- “Nanoscale Effects on Thermodynamics and Phase Equilibria in Oxide Systems,” A. Navrotsky, *ChemPhysChem*, 12, 2207-2215 (2011).
- “Nanocerium - Energetics of Surfaces, Interfaces and Water Adsorption,” S. Hayun, T. Shvareva, and A. Navrotsky, *J. Am. Ceram. Soc.*, 94, 3992-3999 (2011).
- “Thermochemistry of $\text{La}_{0.7}\text{Sr}_{0.3}\text{Mn}_{1-x}\text{Fe}_x\text{O}_3$ Solid Solutions ($0 < x < 1$),” N. Kemik, Y. Takamura, and A. Navrotsky, *J. Solid State Chem.*, 184, 2118-2123 (2011).
- “Thermodynamic Characterization of Boltwoodite and Uranophane: Enthalpy of Formation and Aqueous Solubility,” T. Y. Shvareva, L. Mazeina, D. Gorman-Lewis, P. C. Burns, J. E.S. Szymanowski, J. B. Fein, and A. Navrotsky, *Geochim. Cosmochim. Acta*, 75, 5269-5282 (2011).
- “Energetics of Mixing in $\text{ThO}_2 - \text{CeO}_2$ Fluorite Solid Solutions,” T. Y. Shvareva, V. Alexandrov, M. Asta, and A. Navrotsky, *J. Nucl. Mater.*, 419, 72-75 (2011).
- “Energetics of Al_{13} Keggin Cluster Compounds,” C. R. Armstrong, W. H. Casey, and A. Navrotsky, *Proc. Natl. Acad. Sci.*, 108, 14775-14779 (2011).
- “The Energetics of Nanophase Calcite,” T. Z. Forbes, A. V. Radha, and A. Navrotsky, *Geochim. Cosmochim. Acta*, 75, 7893-7905 (2011).
- “Actinide Dioxides in Water: Interactions at the Interface,” V. Alexandrov, T. Y. Shvareva, S. Hayun, M. Asta, and A. Navrotsky, *J. Phys. Chem. Lett.*, 2, 3130-3134 (2011).
- “Dynamics of Water Confined on the Surface of Titania and Cassiterite Nanoparticles,” N. L. Ross, E. C. Spencer, A. A. Levchenko, A. I. Kolesnikov, D.L. Abernathy, J. Boerio-Goates, B. F. Woodfield, A. Navrotsky, G. Li, W. Wang, and D. Wesolowski, *MRS Proc.*, 1352, 47-56 (2011).
- “Direct Measurement of Surface Energy of CeO_2 by Differential Scanning Calorimetry,” S. Hayun, S. Ushakov, and A. Navrotsky, *J. Am. Ceram. Soc.*, 94, 3679-3682 (2011).
- “Ultrahydrous Stishovite from High-Pressure Hydrothermal Treatment of SiO_2 ,” K. Spektor, J. Nylén, E. Stoyanov, A. Navrotsky, R. L. Hervig, K. Leinenweber, G. P. Holland, and U. Häussermann, *Proc. Natl. Acad. Sci.*, 108, 20918-20922 (2011).
- “Experimental Methodologies for Assessing the Surface Energy of Highly Hygroscopic Materials: The Case of Nanocrystalline Magnesia,” S. Hayun, T. Tran, S. Ushakov, A. Thron, K. van Benthem, A. Navrotsky, and R. Castro, *J. Phys. Chem. C*, 115, 23929-23935 (2011).

- "Yttrium Substitution in MTiO_3 ($M = \text{Ca, Sr, Ba and Ca + Sr + Ba}$) Perovskites and Implication for Incorporation of Fission Products into Ceramic Waste Forms," N. Navi, G. Kimmel, J. Zabicky, S. Ushakov, R. Shneck, M. Mintz, and A. Navrotsky, *J. Am. Ceram. Soc.*, 94, 3112-3116 (2011).
- "Determination of the Magnetic Contribution to the Heat Capacity of Cobalt Oxide Nanoparticles and the Thermodynamic Properties of the Hydration Layers," E. C. Spencer, N. L. Ross, S. F. Parker, B. F. Woodfield, J. Boerio-Goates, S. J. Smith, R. E. Olsen, A. I. Kolesnikov, A. Navrotsky, and C. Ma, *J. Phys.: Condens. Matter*, 23, 205303 (2011).
- "Mesoporous Silica Synthesis: Energetics of Interaction between Framework and Structure Directing Agent," O. Trofymuk, A. A. Levchenko, and A. Navrotsky, *Microporous Mesoporous Mater.*, 149, 119-125 (2012).
- "Uranyl Peroxide Enhanced Nuclear Fuel Corrosion in Seawater," C. R. Armstrong, M. Nyman, T. Shvareva, G. E. Sigmon, P.C. Burns, and A. Navrotsky, *Proc. Natl. Acad. Sci.*, 109, 1874-1877 (2012).
- "Effect of Boron on the Thermodynamic Stability of Amorphous Polymer-Derived Si-(B-)C-N Ceramics," A. H. Tavakoli, J. A. Golczewsky, J. Bill, and A. Navrotsky, *Acta Mater.*, 60, 4514-4522 (2012).
- "Oxide Melt Solution Calorimetry of Fe(II)-Bearing Oxides and Application to the Magnetite – Maghemite ($\text{Fe}_3\text{O}_4\text{--Fe}_{8/3}\text{O}_4$) System," K. I. Lilova, F. Xu, K. M. Rosso, C. I. Pearce, S. Kamali, and A. Navrotsky, *Amer. Miner.*, 97, 164-175 (2012).
- "Thermodynamics of $\text{NiAl}_2\text{O}_4\text{--NiFe}_2\text{O}_4$ Spinel Solid Solutions," K. I. Lilova, K. Shih, C.-W. Pao, J.-F. Lee, and A. Navrotsky, *J. Am. Ceram. Soc.*, 95, 423-430 (2012).
- "Thermodynamic Properties of Uranyl Minerals: Constraints from Calorimetry and Solubility Measurements," T. Y. Shvareva, J. B. Fein, and A. Navrotsky, *Ind. Eng. Chem. Res.*, 51, 607-613 (2012).
- "Yttria Stabilized Zirconia (YSZ) Crystallization in $\text{Al}_2\text{O}_3/\text{YSZ}$ Multilayers," N. Kemik, S. V. Ushakov, M. Gu, N. Schichtel, C. Korte, N. D. Browning, Y. Takamura, and A. Navrotsky, *J. Mater. Res.*, 27, 939-943 (2012).
- "Formation Enthalpies and Heat Capacities of Rare Earth Titanates: RE_2TiO_5 ($\text{RE} = \text{La, Nd and Gd}$)," S. Hayun and A. Navrotsky, *J. Solid State Chem*, 187, 70-74 (2012).
- "Yttria-Stabilized Hafnia: Thermochemistry of Formation and Hydration of Nanoparticles," W. Zhou, S. V. Ushakov, and A. Navrotsky, *J. Mater. Res.*, 27, 1022-1028 (2012).
- "Transparent Nanocrystalline Pure and Ca-doped MgO by Spark Plasma Sintering of Anhydrous Nanoparticles," T. Tran, S. Hayun, A. Navrotsky, and R. Castro, *J. Am. Chem. Soc.*, 95, 1185-1188 (2012).
- "Nuclear Fuel in a Reactor Accident," P. Burns, R. Ewing, and A. Navrotsky, *Science*, 335, 1184 (2012).
- "Experimental Approaches to the Thermodynamics of Ceramics above 1500 °C," S.V. Ushakov and A. Navrotsky, *J. Am. Ceram. Soc.*, 95, 1463-1482 (2012).
- "Thermochemistry of $(\text{Ca}_x\text{Sr}_{1-x})\text{TiO}_3$, $(\text{Ba}_x\text{Sr}_{1-x})\text{TiO}_3$ and $(\text{Ba}_x\text{Ca}_{1-x})$ Perovskite Solid Solutions," N. U. Navi, R. Z. Shneck, T. Y. Shvareva, G. Kimmel, J. Zabicky, M. H. Mintz, and A. Navrotsky, *J. Am. Ceram. Soc.*, 95, 1717-1726 (2012).
- "Energetic and Structural Studies of Amorphous $\text{Ca}_{1-x}\text{Mg}_x\text{CO}_3 \cdot n\text{H}_2\text{O}$ ($0 \leq x \leq 1$)," A. V. Radha, A. Fernandez-Martinez, Y. Hu, Y.-S. Jun, G. A. Waychunas, and A. Navrotsky, *Geochim. Cosmochim. Acta*, 90, 83-95 (2012).
- "Fluorite-Pyrochlore Transformation in $\text{Eu}_2\text{Zr}_2\text{O}_7$ - Direct Calorimetric Measurement of Phase Transition, Formation and Surface Enthalpies," M. P. Saradhi, S. V. Ushakov, and A. Navrotsky, *Roy. Soc. Chem. Advances.*, 2, 3328-3334 (2012).

- "Co₃O₄-Co₂ZnO₄ Spinel: The Case for a Solid Solution," N. H. Perry, T. O. Mason, C. Mab, A. Navrotsky, Y. Shi, J. S. Bettinger, M. F. Toney, T. R. Paudel, S. Lany, and A. Zungere, *J. Solid State Chem.*, 190, 143-149 (2012).
- "Energetics of Cation Mixing in Urania-Ceria Solid Solutions with Stoichiometric Oxygen Concentrations," B. Hanken, M. Asta, and A. Navrotsky, *Phys. Chem. Chem. Phys.*, 14, 5680-5685 (2012).
- "Calorimetric Studies of the Stability of Perovskites Relevant to Electroceramics," A. Navrotsky, *Electr. Chem. Soc. Trans.*, 45, 11-17 (2012).
- "Heat Capacity Studies of Surface Water Confined on Cassiterite (SnO₂) Nanoparticles," Q. Shi, J. Boerio-Goates, K. Woodfield, M. Rytting, K. Pulsipher, E. Spencer, N. Ross, A. Navrotsky, and B. Woodfield, *J. Phys. Chem.*, 116, 3910-3917 (2012).
- "Nanostructure and Energetics of Carbon-Rich SiCN Ceramics Derived from Polysilylcarbodiimides: Role of the Nanodomain Interfaces," S. Widgeon, G. Mera, Y. Gao, E. Stoyanov, S. Sen, A. Navrotsky, and R. Riedel, *Chem. Mater.*, 24, 1181-1191 (2012).
- "Amorphous Iron (II) Carbonate: Crystallization Energetics and Comparison to Other Carbonate Minerals Related to CO₂ Sequestration," O. Sel, A. V. Radha, K. Dideriksen, and A. Navrotsky, *Geochim. Cosmochim. Acta*, 87, 61-68 (2012).
- "Energetics of Stepwise Disorder Transformation in Pyrochlores, Re₂Ti₂O₇ (Re = Y, Gd and Dy)," S. Hayun, T. Tran, J. Lian, and A. Navrotsky, *Acta Mater.*, 60, 4303-4310 (2012).
- "Thermodynamics of the CoO-ZnO System at Bulk and Nanoscale," C. Ma and A. Navrotsky, *Chem. Mater.*, 24, 2311-2315 (2012).
- "Thermodynamics of Nanocrystalline Sn_{0.586} Ti_{0.414}O₂ Rutile Solid Solution: Comparison with Nanocrystalline SnO₂ and TiO₂ and with Bulk Materials," Y. Ma and A. Navrotsky, *J. Am. Ceram. Soc.*, 95, 2622-2626 (2012).
- "Thermodynamics of Nanoscale Lead Titanate and Barium Titanate Perovskites," G. C. C. Costa, P. Saradhi, and A. Navrotsky, *J. Amer. Cer. Soc.*, 95, 3254-3262 (2012).
- "Enthalpy of Formation of Ln₂O₂CO₃ II (Ln = La, Nd, Eu) and Thermodynamics of Decomposition Equilibria," A. Sjästad, H. Fjellvåg, K. Helean, and A. Navrotsky, *Thermochim. Acta*, 550, 76-82 (2012).
- "Thermodynamics of the Magnetite-Ulvöspinel (Fe₃O₄-Fe₂TiO₄) Solid Solution," K. I. Lilova, C. I. Pearce, C. Gorski, K. M. Rosso, and A. Navrotsky, *Amer. Miner.*, 97, 1330-1338 (2012).
- "Enthalpies of Formation and Insights into Defect Association in Ceria Singly and Doubly Doped with Neodymia and Samaria," S. Buyukkilic, T. Shvareva, and A. Navrotsky, *Solid State Ionics*, 227, 17-22 (2012).
- "Understanding the Stability of Fluorosulfate Li-ion Battery Cathode Materials: A Thermochemical Study of LiFe_{1-x}Mn_xSO₄F (0 ≤ x ≤ 1) Polymorphs," A. V. Radha, J. D. Furman, M. Ati, B. C. Melot, J. M. Tarascon, and A. Navrotsky, *J. Mat. Chem.*, 22, 24446-24452 (2012).
- "Thermodynamics of Manganese Oxides: Effects of Particle Size and Hydration on Oxidation-Reduction Equilibria among Hausmannite, Bixbyite, and Pyrolusite," N. Birkner and A. Navrotsky, *Amer. Miner.*, 97, 1291-1298 (2012).
- "Energetics of Dysprosia-Stabilized Bismuth Oxide Electrolytes," T. Tran and A. Navrotsky, *Chem. Mater.*, 24, 4185-4191 (2012).
- "Challenges in Ceramic Science: A Report on the Workshop from Emerging Research Areas in Ceramic Science," G. Rohrer, A. Navrotsky, *et al.*, *J. Am. Ceram. Soc.*, 95, 3699-3712 (2012).

- “Polymer-Derived SiCN and SiOC Ceramics – Structure and Energetics at the Nanoscale,” G. Mera, A. Navrotsky, S. Sen, H.-J. Kleebe, and R. Riedel, *J. Mat. Chem.*, 1, 3826-3836 (2013).
- “Thermochemistry of Barium Hollandites,” G. C. C. Costa, H. Xu, and A. Navrotsky, *J. Am. Ceram. Soc.*, 96, 1554-1561 (2013).
- “Stabilizing Effect of Mg on the Energetics of the Li(Ni,Co,Al)O₂ Cathode Material for Lithium Ion Batteries,” A. Tavakoli, H. Kondo, Y. Ukyo, and A. Navrotsky, *J. Electrochem. Soc.*, 160, A302-A305 (2013).
- “Thermodynamic Study of Alkali and Alkaline-Earth Cation-Exchanged Natrolites,” L. Wu, Y. Lee, Y. Lee, and A. Navrotsky, *Microporous Mesoporous Mater.*, 167, 221-227 (2013).
- “Thermochemistry of Zeolitic P Frameworks (ZIF) with Varying Porosity,” J. T. Hughes, T. D. Bennett, A. K. Cheetham, and A. Navrotsky, *J. Am. Chem. Soc.*, 135, 598-601 (2013).
- “Small Molecule – Silica Interactions in Porous Silica Structures,” D. Wu and A. Navrotsky, *Geochim. Cosmochim. Acta*, 109, 38-50 (2013).
- “Heat Capacity and Thermodynamics of a Synthetic Two-Line Ferrihydrite, FeOOH·0.027H₂O,” C. L. Snow, K. I. Lilova, A. V. Radha, Q. Shi, S. Smith, A. Navrotsky, J. Boerio-Goates, and B. F. Woodfield, *J. Chem. Thermo.*, 58, 307-314 (2013).
- “Low Temperature Heat Capacity of Bulk and Nanophase ZnO and Zn_{1-x}Co_xO Wurtzite Phases,” C. Ma, Q. Shi, B. Woodfield, and A. Navrotsky, *J. Chem. Thermo.*, 60, 191-196 (2013).
- “Energetics of Lanthanum Silicate Apatite: Influence of Interstitial Oxygen and Cation Vacancy Concentrations in La_{9.33+x}(SiO₄)₆O_{2+3x/2} and La_{10-x}Sr_x(SiO₄)₆O_{3-0.5x},” S. M. Hosseini, T. Shvareva, and A. Navrotsky, *Solid State Ionics*, 233, 62-66 (2013).
- “Characterization of Surface Defect Sites on Bulk and Nanophase Anatase and Rutile TiO₂ by Low-Temperature Specific Heat,” J. Boerio-Goates, S. J. Smith, S. Liu, B. E. Lang, G. Li, B. F. Woodfield, and A. Navrotsky, *J. Phys. Chem.*, 117, 4544-4550 (2013).
- “Thermodynamic Studies of CaLaFe₁₁O₁₉(s),” S. K. Rakshit, S. C. Parida, K. Lilova, and A. Navrotsky, *J. Solid State Chem.*, 201, 68-74 (2013).
- “Energetic Basis of Catalytic Activity of Layered Nanophase Calcium Manganese Oxides for Water Oxidation,” N. Birkner, S. Nayeri, B. Pashaei, M. Najafpour, W. H. Casey, and A. Navrotsky, *Proc. Natl. Acad. Sci.*, 110, 8801-8806 (2013).
- “Thermochemistry of Two Calcium Silicate Carbonate Minerals: Scawtite, Ca₇(Si₆O₁₈)(CO₃)·2H₂O, and Spurrite, Ca₅(SiO₄)₂(CO₃),” Y. Zhang, A. V. Radha, and A. Navrotsky, *Geochim. Cosmochim. Acta*, 115, 92-99 (2013).
- “Effect of Precursor on Speciation and Nanostructure of SiBCN Polymer Derived Ceramics,” S. J. Widgeon, G. Mera, Y. Gao, S. Sen, A. Navrotsky, and R. Riedel, *J. Am. Ceram. Soc.* 96, 1651-1659 (2013).
- “Thermodynamic Control of Phase Composition and Crystallization of Metal-Modified Silicon Oxycarbides,” E. Ionescu, C. Terzioglu, C. Linck, J. Kaspar, A. Navrotsky, and R. Riedel, *J. Am. Ceram. Soc.*, 96, 1899-1903 (2013).
- “Thermodynamics of Uranium Minerals and Related Materials,” A. Navrotsky, T. Shvareva, and X. Guo, in “Uranium – Cradle to Grave,” P. C. Burns and G. E. Sigmon, Eds., *Mineralogical Association of Canada, Short Course Volume 43*, 147-164 (2013).

- "Effect of Demixing and Coarsening on the Energetics of Poly(boro)silazane-Derived Amorphous Si-(B-)C-N Ceramics," Y. Gao, S. J. Widgeon, T. Tran, A. Tavakoli, G. Mera, S. Sen, R. Riedel, and A. Navrotsky, *Scripta Mater.*, 69, 347-350 (2013).
- "Enthalpies of Formation of Fe–Ni Monosulfide Solid Solutions," A. H. Tavakoli and A. Navrotsky, *Amer. Miner.*, 98, 1508-1515 (2013).
- "Direct Calorimetric Measurement of Enthalpy of Adsorption of Carbon Dioxide on CD-MOF-2, a Green Metal–Organic Framework," D. Wu, J. J. Gassensmith, D. Gouvêa, S. Ushakov, J. F. Stoddart, and A. Navrotsky, *J. Am. Chem. Soc.*, 135, 6790-6793 (2013).
- "Zirconium Incorporation into CaTiO₃ Perovskite Prepared from Xerogels and Implication for the Fate of (Ca,Sr)TiO₃ Nuclear Waste Ceramics," N. U. Navi, G. Kimmel, G. Yardeni, J. Zabicky, R. Z. Shneck, M. H. Mintz, and A. Navrotsky, *J. Am. Ceram. Soc.*, 96, 2644-2650 (2013).
- "Thermodynamic Study of Orthorhombic T^x and Tetragonal T^l Lanthanum Cuprate, La₂CuO₄," K. I. Lilova, R. Hord, L. Alff, B. Albert, and A. Navrotsky, *J. Solid State Chem.*, 204, 91-94 (2013).
- "Thermochemistry of the Paddle Wheel MOFs: Cu-HKUST-1 and Zn-HKUST-1," M. K. Bhunia, J. T. Hughes, J. C. Fetting, and A. Navrotsky, *Langmuir*, 29, 8140-8145 (2013).
- "Amorphous Alumina Nanoparticles: Structure, Surface Energy, and Thermodynamic Phase Stability," A. Tavakoli, P. S. Maram, S. J. Widgeon, J. Rufner, K. van Benthem, S. Ushakov, S. Sen, and A. Navrotsky, *J. Phys. Chem. C*, 117, 17123-17130 (2013).
- "Carbon Substitution for Oxygen in Silicates in Planetary Interiors," S. Sen, S. J. Widgeon, A. Navrotsky, G. Mera, A. Tavakoli, E. Ionescu, and R. Riedel, *Proc. Natl. Acad. Sci.* 110, 15904-15907 (2013).
- "Noble Gas Adsorption in Copper Trimesate, HKUST-1: An Experimental and Computational Study," Z. Hulvey, K. V. Lawler, Z. Qiao, J. Zhou, D. Fairen-Jimenez, R. Q. Snurr, S. V. Ushakov, and A. Navrotsky, *J. Phys. Chem. C*, 117, 20116-20126 (2013).
- "Surface Energetics of Nanoscale LaMnO_{3+δ} Perovskite," L. Vradman and A. Navrotsky, *J. Am. Ceram. Soc.*, 96, 3202-3209 (2013).
- "Thermochemical Evidence for Strong Iodine Chemisorption by ZIF-8," J. T. Hughes, D. F. Sava, T. M. Nenoff, and A. Navrotsky, *J. Am. Chem. Soc.*, 135, 16256-16259 (2013).
- "Thermodynamics of Carbonates," A. V. Radha and A. Navrotsky, in "Geochemistry of Geologic CO₂ Sequestration," D. J. DePaolo, D. R. Cole, A. Navrotsky, and I. C. Bourg, Eds., *Reviews in Mineralogy & Geochemistry* 77, 73-121 (2013).
- "Thermodynamics of Nanoscale Calcium and Strontium Titanate Perovskites," S. K. Sahu, P. S. Maram, and A. Navrotsky, *J. Am. Ceram. Soc.*, 96, 3670-3676 (2013).
- "Experimental Confirmation of Low Surface Energy in LiCoO₂ and implications for Lithium Battery Electrodes," P. S. Maram, G. C. C. Costa, and A. Navrotsky, *Angew. Chem. Int. Ed.*, 52, 12139-12142 (2013).
- "Thermodynamic Basis for Evolution of Apatite in Calcified Tissues," S. Rollin-Martinet, A. Navrotsky, E. Champion, D. Grossin, and C. Drouet, *Amer. Miner.*, 98, 2037-2045 (2013).
- "Energetic Effects of Substitution of La-Nd and Si-Ge Oxyapatite-Type Materials," S. M. Hosseini and A. Navrotsky, *J. Am. Ceram. Soc.*, 96, 3915-3919 (2013).
- "Theoretical Study of Mixing Energetics in Homovalent Fluorite-Structured Oxide Solid Solutions," V. Alexandrov, N. Gronbech-Jensen, A. Navrotsky, and M. Asta, *J. Nucl. Mater.*, 444, 292-297 (2014).

- "Synthesis, Characterization and Thermochemistry of Synthetic Pb-As, Pb-Cu and Pb-Zn Jarosites," F. Furray, A. M. L. Smith, A. Navrotsky, K. Wright, K. A. Hudson-Edwards, and W. E. Dubbin, *Geochim. Cosmochim. Acta*, 127, 107-119 (2014).
- "Experimental Energetics of Large and Extra-Large Pore Zeolites: Pure Silica Beta Polymorph C (BEC) and Ge-containing ITQ-33," L. Wu, J. Hughes, M. Moliner, A. Navrotsky, and A. Corma, *Microporous Mesoporous Mater.*, 187, 77-81 (2014).
- "Energetics of Disordered and Ordered Rare Earth Oxide-Stabilized Bismuth Oxide Ionic Conductors," T. Tran and A. Navrotsky, *Phys. Chem. Chem. Phys.*, 16, 2331-2337 (2014).
- "Ultra-High Temperature Oxidation of a Hafnium Carbide-based Solid Solution Ceramic Composite," D. Lipke, S. V. Ushakov, A. Navrotsky, and W. Hoffman, *Corros. Sci.*, 80, 402-407(2014).
- "Energetics and Structure of Polymer Derived Si-(B-)O-C Glasses: Effect of the Boron Content and Pyrolysis Temperature," A. H. Tavakoli, R. Campostrini, C. Gervais, F. Babonneau, J. Bill, G. Soraru, and A. Navrotsky, *J. Am. Ceram. Soc.*, 97, 303-309 (2014).
- "Thermochemistry of Onion-Like Carbons," G. C. C. Costa, J. K. McDonough, Y. Gogotsi, and A. Navrotsky, *Carbon*, 69, 490-494 (2014).
- "Cerium Substitution in Yttrium Iron Garnet: Valence State, Structure, and Energetics," X. Guo, A. H. Tavakoli, S. Sutton, R. Kukkadapu, A. Lanzirrotti, M. Newville, M. Asta, and A. Navrotsky, *Chem. Mater.*, 26, 1133-1143 (2014).
- "Guest-Host Interactions of a Rigid Organic Molecule (TMAAI) in Porous Silica Frameworks," D. Wu, S.-J. Hwang, S. I. Zones, and A. Navrotsky, *Proc. Natl. Acad. Sci.*, 111, 1720-1725 (2014).
- "Low Temperature Heat Capacity Study of Ba₂TiSi₂O₈ and Sr₂TiSi₂O₈," Q. Shi, T.-J. Park, J. Schliesser, A. Navrotsky, and B. F. Woodfield, *J. Chem. Thermo.*, 72, 77-84 (2014).
- "High Temperature Materials Chemistry and Thermodynamics," S. K. Sahu and A. Navrotsky, in "High Temperature Materials and Mechanisms," Y. Bar-Cohen, Ed., CRC Press, Taylor & Francis Group, Boca Raton, Florida, 17-30 (2014).
- "Energetics of Silica-poor Glasses in the System MgO - SiO₂ and Mg_{0.5}Ca_{0.5}O - SiO₂," N. K. Nasikas and A. Navrotsky, *J. Am. Ceram. Soc.*, 97, 451-456 (2014).
- "The Energy Landscape of Uranyl Peroxide Species," E. Tiferet, A. Gil, C. Bo, T. Y. Shvareva, M. Nyman, and A. Navrotsky, *Chem. Eur. J.*, 20, 3646-3651 (2014).
- "Possible Correlation Between Enthalpies of Formation and Redox Potentials in LiMSO₄OH (M= Co, Fe, Mn), Li-ion Polyanionic Battery Cathode Materials," A. V. Radha, C. V. Subban, M. L. Sun, J. M. Tarascon, and A. Navrotsky, *J. Mat. Chem. A*, 2, 6887-6894 (2014).
- "Rapidly Reversible Redox Transformation in Nanophase Manganese Oxides at Room Temperature Triggered by Changes in Hydration," N. Birkner and A. Navrotsky, *Proc. Natl. Acad. Sci.*, 111, 6209-6214 (2014).
- "Direct Measurement of Fusion Enthalpy of LaAlO₃ and Comparison of Energetics of Melt, Glass, and Amorphous Thin Films," S. V. Ushakov and A. Navrotsky, *J. Am. Ceram. Soc.*, 97, 1589-1594 (2014).
- "Manganese Carbonate Formation from Amorphous and Nanocrystalline Precursors: Thermodynamics and Geochemical Relevance," A. V. Radha and A. Navrotsky, *Amer. Miner.*, 99, 1063-1070 (2014).
- "Thermochemistry, Morphology, and Optical Characterization of Germanium Allotropes," J. V. Zaikina, E. Muthuswamy, K. I. Lilova, Z. M. Gibbs, M. Zeilinger, G. J. Snyder, T. F. Fassler, A. Navrotsky and S. M. Kauzlarich, *Chem. Mater.*, 26, 3263-3271 (2014).

- "Energy Landscape of Self-Assembled Superlattices of PbSe Nanocrystals," Z. Quan, D. Wu, J. Zhu, W. H. Evers, J. M. Boncella, L. D. A. Siebbeles, Z. Wang, A. Navrotsky, and H. Xu, *Proc. Natl. Acad. Sci.*, 111, 9054-9057 (2014).
- "Computational Study of the Energetics and Defect Clustering Tendencies for Y and La-Doped UO₂," J. Solomon, V. Alexandrov, B. Sadigh, A. Navrotsky, and M. Asta, *Acta Mater.*, 78, 282-289 (2014).
- "Defect Chemistry of Singly and Doubly Doped Ceria: Correlation between Ion Transport and Energetics," S. Buyukkilic, S. Kim, and A. Navrotsky, *Angew. Chem.*, 126, 9671-9675 (2014).
- "Energetics of CO₂ and H₂O Adsorption on Zinc Oxide," D. Gouvea, S. V. Ushakov, and A. Navrotsky, *Langmuir*, 30, 9091-9097 (2014).
- "Energetics of Formation and Hydration of a Porous Metal Organic Nanotube," S. K. Sahu, D. K. Unruh, T. Z. Forbes, and A. Navrotsky, *Chem. Mater.*, 26, 5105-5112 (2014).
- "Thermodynamics of Thorium Substitution in Yttrium Iron Garnet: Comparison of Experimental and Theoretical Results," X. Guo, Z. Rak, A. H. Tavakoli, U. Becker, R. C. Ewing, and A. Navrotsky, *J. Mater. Chem. A*, 2, 16945-16954 (2014).
- "Thermochemistry of Nanodiamond Terminated by Oxygen Containing Functional Group," G. C. C. Costa, O. Shenderova, V. Mochalin, Y. Gogotsi, and A. Navrotsky, *Carbon*, 80, 544-550 (2014).
- "Enthalpy of Formation and Thermodynamic Insights into Yttrium Doped BaZrO₃," M. D. Goncalves, P. S. Maram, R. Muccillo, and A. Navrotsky, *J. Mater. Chem. A*, 2, 17840-17847 (2014).
- "Energetics of Lanthanide-Doped Calcium Phosphate Apatite," S. M. Hosseini, C. Drouet, A. Al-Kattan, and A. Navrotsky, *Amer. Miner.*, 99, 2320-2327 (2014).
- "Energetics of Heterometal Substitution in ϵ -Keggin [MO₄Al₁₂(OH)₂₄(OH₂)₁₂]^{6/7/8+} Ions," D. Reusser, W. H. Casey, and A. Navrotsky, *Amer. Miner.*, 99, 2337-2343 (2014).
- "Energetics of Spinel in the Fe-Ti-O System at the Nanoscale," K. I. Lilova, C. I. Pearce, K. M. Rosso, and A. Navrotsky, *ChemPhysChem*, 15, 3655-3662 (2014).
- "Progress and New Directions in Calorimetry: A 2014 Perspective," A. Navrotsky, *J. Am. Ceram. Soc.*, 97, 3349-3359 (2014).
- "Energetics of Confinement of *n*-Hexane in Ca-Na Ion Exchanged Zeolite A," H. Sun, D. Wu, X. Guo, B. Shen, J. Liu, and A. Navrotsky, *J. Phys. Chem.*, 118, 25590-25596 (2014).
- "Taking the Measure of Molten Uranium Oxide: Levitated Droplets of Uranium Oxide Reveal Complex Structure Below and Above the Melting Point," A. Navrotsky, *Science*, 346, 916-917 (2014).
- "Energetics of Metastudtite and Implications for Nuclear Waste Alternation," X. Guo, S. V. Ushakov, S. Labs, H. Curtius, D. Bosbach, and A. Navrotsky, *Proc. Natl. Acad. Sci. USA*, 111, 17737-17742 (2014).
- "Energetics of CO₂ Adsorption on Mg-Al Layered Double Hydroxides and Related Mixed Metal Oxides," S. Radha and A. Navrotsky, *J. Phys. Chem. C*, 118, 29836-29844 (2014).
- "Facile Synthesis of Ba_{1-x}K_xFe₂As₂ Superconductors via Hydride Route," J. Zaikina, M. Batuk, A. Abakumov, A. Navrotsky, and S. Kauzlarich, *J. Amer. Chem. Soc.*, 136, 16932-16939 (2014).
- "Influence of Antimony Substitution on Spontaneous Strain and Thermodynamic Stability of Lanthanum Orthoniobate," A. Mielewczyk-Gryn, S. Wachowski, K. Lilova, X. Guo, M. Gazda, and A. Navrotsky, *Ceram. Inter.*, 41, 2128-2133 (2015).
- "Direct Experimental Measurement of Water Interaction Energetics in Amorphous and Nanocrystalline Carbonates MCO₃ (M = Ca, Mn, Mg)," A. V. Radha and A. Navrotsky, *Cryst. Grow. Des.*, 15, 70-78 (2015).

- “Combined Computational and Experimental Investigation of the Refractory Properties of $\text{La}_2\text{Zr}_2\text{O}_7$,” Q.-J. Hong, S. V. Ushakov, A. Navrotsky, A. v. d. Walle, *Acta Mater.*, 84, 275-282 (2015).
- “White Si-O-C Ceramic: Structure and Thermodynamic Stability,” A. H. Tavakoli, M. Armentrout, M. Narisawa, S. Sen, and A. Navrotsky, *J. Am. Ceram. Soc.*, 98, 242-246 (2015).
- “Structural Behavior of $\text{Ba}_{1.24}\text{Al}_{2.48}\text{Ti}_{5.52}\text{O}_{16}$ Hollandite at High Temperature: An *In Situ* Neutron Diffraction Study,” H. Xu, G. C. C. Costa, C. R. Stanek, and A. Navrotsky, *J. Amer. Ceram. Soc.*, 98, 255-262 (2015).
- “Energetics and Defect Clustering Trends for Trivalent Rare Earth Cations Substituted in UO_2 ,” J. M. Solomon, A. Navrotsky and M. Asta, *J. Nuc. Mater.*, 457, 252-255 (2015).
- “Energetics of Bismuth Vanadate,” G. P. Nagabhushana, A. H. Tavakoli, and A. Navrotsky, *J. Solid State Chem.*, 225, 187-192 (2015).
- “Thermodynamic Stability and Correlation with Synthesis Conditions, Structure and Phase Transformations in Orthorhombic and Monoclinic $\text{Li}_2\text{M}(\text{SO}_4)_2$ ($M = \text{Mn, Fe, Co, Ni}$) Polymorphs,” A. V. Radha, L. Lander, G. Rousse, J.-M. Tarascon, and A. Navrotsky, *J. Mater. Chem. A*, 3, 2601-2608 (2015).
- “Thermodynamics of Metal-Organic Frameworks,” D. Wu and A. Navrotsky, *J. Solid State Chem.*, 223, 53-58 (2015).
- “Hydrogenated Si-O-C Nanoparticles: Synthesis, Structure and Thermodynamic Stability,” A. H. Tavakoli, M. M. Armentrout, S. Sen, and A. Navrotsky, *J. Mater. Res.*, 30, 295-303 (2015).
- “Synthesis, Characterization and Thermochemistry of Cs-, Rb- and Sr-Substituted Barium Aluminium Titanate Hollandites,” H. Xu, L. Wu, J. Zhu, and A. Navrotsky, *J. Nucl. Mater.*, 459, 70-76 (2015).
- “Thermodynamic Complexity of Carbon Capture in Alkylamine-Functionalized Metal-Organic Frameworks,” D. Wu, T. M. McDonald, Z. Quan, S. V. Ushakov, P. Zhang, J. R. Long, and A. Navrotsky, *J. Mater. Chem. A*, 3, 4248-4254 (2015).
- “Pyrochlore and Perovskite Potassium Tantalate: Enthalpies of Formation and Phase Transformation,” S. Zlotnik, S. K. Sahu, A. Navrotsky, and P. Vilarinho, *Chem. Euro. J.*, 21, 5231-5237 (2015).
- “*In Situ* Diffraction from Levitated Solids under Extreme Conditions – Structure and Thermal Expansion in the $\text{Eu}_2\text{O}_3\text{ZrO}_2$ System,” P.S. Maram, S. V. Ushakov, R. Weber, C. Benmore, and A. Navrotsky, *J. Amer. Ceram. Soc.*, 98, 1292-1299 (2015).
- “Energetics of Order-Disorder in Layered Magnesium Aluminium Double Hydroxides with Interlayer Carbonate,” S. Radha and A. Navrotsky, *Inorg. Chem.*, 54, 3253-3259 (2015).
- “Energetics and Structural Evolution of Na-Ca Exchanged Zeolite A During Heating,” H. Sun, D. Wu, X. Guo, and A. Navrotsky, *Phys. Chem. Chem. Phys.*, 17, 9241-9247 (2015).
- “Energetics of Sodium-Calcium Exchanged Zeolite A,” H. Sun, D. Wu, X. Guo, B. Shen, and A. Navrotsky, *Phys. Chem. Chem. Phys.*, 17, 11198-11203 (2015).
- “Formation Enthalpies of $\text{LaLn}'\text{O}_3$ ($\text{Ln}' = \text{Ho, Er, Tm and Yb}$) Interlanthanide Perovskites,” J. Qi, X. Guo, A. Mielewczyk-Gryn, and A. Navrotsky, *J. Solid State Chem.*, 227, 150-154 (2015).
- “Charge-coupled Substituted Garnets ($\text{Y}_{3-x}\text{Ca}_{0.5x}\text{M}_{0.5x}$) Fe_5O_{12} ($M = \text{Ce, Th}$): Structure and Stability as Crystalline Nuclear Waste Forms,” X. Guo, R. Kukkadapu, A. Lanzirotti, M. Newville, M. Engelhard, S. Sutton, and A. Navrotsky, *Inorg. Chem.*, 54, 4156-4166 (2015).
- “Thermodynamics of Solid Phases Containing Rare Earth Oxides,” A. Navrotsky, W. Lee, A. Mielewczyk-Gryn, S. V. Ushakov, A. Anderko, H. Wu, and R. Riman, *J. Chem. Thermo.*, 88, 126-141 (2015).

- “Formation and Transformation of a Short Range Ordered Iron Carbonate Precursor,” K. Dideriksen, C. Frandsen, N. Bovet, A. F. Wallace, O. Sel, T. Arbour, A. Navrotsky, J. J. De Yoreo, and J. F. Banfield, *Geochim. Cosmochim. Acta*, **164**, 94-109 (2015).
- “Probing the Energetics of Organic-Nanoparticle Interactions: Ethanol on Calcite,” D. Wu and A. Navrotsky, *Proc. Natl. Acad. Sci.*, **112**, 5314-5318 (2015).
- “Thermodynamics of Formation of Coffinite, $USiO_4$,” X. Guo, S. Szenknect, A. Mesbah, S. Labs, N. Clavier, C. Poinssot, S. V. Ushakov, H. Curtius, D. Bosbach, R. C. Ewing, P. C. Burns, N. Dacheux, and A. Navrotsky, *Proc. Natl. Acad. Sci.*, **112**, 6551-6555 (2015).
- “A Study on the Thermal Conversion of Scheelite-Type ABO_4 into Perovskite-Type $AB(O,N)_3$,” W. Li, D. Li, A. Gurlo, S. Zander, P. Jones, A. Navrotsky, Z. Shen, R. Riedel, and E. Ionescu, *Dalt. Trans.*, **44**, 8238-8246 (2015).
- “Heat Capacities and Thermodynamics of Formation of ϵ -Keggin Ma_{12} Selenates (M= Al(III), Ga(III), or Ge(IV)),” D. Reusser, J. Schliesser, B. F. Woodfield and A. Navrotsky, *J. Chem. Thermo.*, **89**, 296-305 (2015).
- “Thermodynamics of Methane Adsorption on Copper HKUST-1 at Low Pressure,” D. Wu, X. Guo, H. Sun, and A. Navrotsky, *J. Phys. Chem. Lett.*, **6**, 2439-2443 (2015).
- “Energy Landscape of Water and Ethanol on Silica Surfaces,” D. Wu, X. Guo, H. Sun, and A. Navrotsky, *J. Phys. Chem. C*, **119**, 15428-15433 (2015).
- “A Combined Calorimetric and Computational Study of the Energetics of Rare Earth Substituted UO_2 Systems,” L. Zhang, J. M. Solomon, M. D. Asta, and A. Navrotsky, *Acta Mater.*, **97**, 191-198 (2015).
- “Thermochemistry of Rare Earth Doped Uranium Oxides $Ln_xU_{1-x}O_{2-0.5x+y}$,” L. Zhang and A. Navrotsky, *J. Nucl. Mater.*, **465**, 682-691 (2015).
- “Thermodynamic Stability of Lead-Free Alkali Niobate and Tantalate Perovskites,” S. K. Sahu, S. Zlotnik, A. Navrotsky and P. M. Vilarinho, *J. Mater. Chem. C*, **3**, 7691-7698 (2015).
- “Heat Capacities and Thermodynamics of Formation of *flat*- Al_{13} nitrate – $[Al_{13}(OH)_{24}(H_2O)_{24}](NO_3)_{15} \cdot 11H_2O$,” D. Reusser, J. Schliesser, W. S. Elliott, B. F. Woodfield, D. W. Johnson, and A. Navrotsky, *J. Chem. Thermo.*, **90**, 224-231 (2015).
- “Enthalpies of Formation of Rare Earth Niobates, RE_3NbO_7 ,” A. Mielewczyk-Gryn and A. Navrotsky, *Amer. Miner.*, **100**, 1578-1583 (2015).
- “Mineralogy, Materials Science, Energy, and Environment – A 2015 Perspective,” A. Navrotsky, *Amer. Miner.*, **100**, 674-680 (2015).
- “Thermochemistry of Multiferroic Organic-Inorganic Hybrid Perovskites $[(CH_3)_2NH_2][M(HCOO)_3]$ (M = Mn, Co, Ni and Zn),” G. P. Nagabhushana, R. Shivaramaiah, and A. Navrotsky, *J. Amer. Chem. Soc.*, **137**, 10351-10356 (2015).
- “Energetic Insight into the Formation of Solids from Aluminum Polyoxocations,” D. Reusser, W. H. Casey and A. Navrotsky, *Angew. Chemi.*, **54**, 9253-9256 (2015).
- “Effects of Simulated Rare Earth Recycling Wastewaters on Biological Nitrification,” Y. Fujita, J. Barnes, A. Eslamimanesh, M. M. Lencka, A. Anderko, R. E. Riman, and A. Navrotsky, *Enviro. Sci. & Tech.*, **49**, 9460-9468 (2015).
- “Crystallization by Particle Attachment in Synthetic, Biogenic, and Geologic Environments,” J. J. De Yoreo, P. U. P. A. Gilbert, N. A. H. M. Sommerdijk, R. L. Penn, S. Whitelam, D. Joester, H. Z. Zhang, J. D. Rimer, A. Navrotsky, J. F. Banfield, A. F. Wallace, F. M. Michel, F. C. Meldrum, H. Colfen, and P. M. Dove, *Science*, **349**, aaa6760-1-9 (2015).

- “Thermochemistry of Perovskites in the Lanthanum-Strontium-Manganese-Iron Oxide System,” C. Marinescu, L. Vradman, S. Tanasescu, and A. Navrotsky, *J. Solid State Chem.*, 230, 411-417 (2015).
- “Thermodynamics of $\text{Fe}_3\text{O}_4 - \text{Co}_3\text{O}_4$ and $\text{Fe}_3\text{O}_4 - \text{Mn}_3\text{O}_4$ Spinel Solid Solutions at Bulk and Nanoscale,” S. K. Sahu, B. Huang, K. I. Lilova, B. F. Woodfield, and A. Navrotsky, *Phys. Chem. Chem. Phys.*, 17, 22286-22295 (2015).
- “Energetics of Lanthanide Cobalt Perovskites: $\text{LnCoO}_{3-\delta}$ (Ln = La, Nd, Sm, Gd),” S. K. Sahu, S. Tanasescu, B. Scherrer, C. Marinescu, and A. Navrotsky, *J. Mater. Chem. A*, 3, 19490-19496 (2015).
- “Structure and Thermal Expansion of YSZ and $\text{La}_2\text{Zr}_2\text{O}_7$ Above 1500 °C From Neutron Diffraction on Levitated Samples,” S. V. Ushakov, A. Navrotsky, R. Weber, and J. Neuefeind, *J. Am. Ceram. Soc.*, 98, 3381-3388 (2015).
- “Heat Capacities, Standard Entropies and Gibbs Free Energies of Sr-, Rb- and Cs-Substituted Barium Aluminotitanate Hollandites,” L. Wu, J. Schliesser, B. F. Woodfield, H. Xu, and A. Navrotsky, *J. Chem. Thermo.*, 93, 1-7 (2016).
- “Phase Transformations and Acoustic Mode Softening in Tb-Gd Orthophosphate,” O. Tschauer, S. V. Ushakov, A. Navrotsky, and L. A. Boatner, *J. Phys. Condens. Matter.*, 28, 035403 (7pp) (2016).
- “Thermodynamics of Solvent Interaction with the Metal Organic Framework MOF-5,” Z. Akimbekov, D. Wu, C. Brozek, M. Dinca, and A. Navrotsky, *Phys. Chem. Chem. Phys.*, 18, 1158-1162 (2016).
- “Little Thermodynamic Penalty for Synthesis of Ultraporous Metal Organic Frameworks,” Z. Akimbekov and A. Navrotsky, *ChemPhysChem* 17, 468-470 (2016).
- “Energetics at the Nanoscale: Impacts for Geochemistry, the Environment, and Materials,” A. Navrotsky, *MRS Bull.*, 41, 139-145 (2016).
- “U(v) in Metal Uranates: A Combined Experimental and Theoretical Study of MgUO_4 , CrUO_4 , and FeUO_4 ,” X. Guo, E. Tiferet, L. Qi, J. M. Solomon, A. Lanzirrotti, M. Newville, M. H. Engelhard, R. K. Kukkadapu, D. Wu, E. S. Ilton, M. Asta, S. R. Sutton, H. Xu, and A. Navrotsky, *Dalt. Trans.*, 45, 4622-4632 (2016).
- “Heat Capacities and Thermodynamic Properties of Antimony Substituted Lanthanum Orthoniobates,” A. Mielewczyk-Gryn, S. Wachowski, J. Strychalska, K. Zagorski, T. Klimczuk, A. Navrotsky, and M. Gazda, *Ceram. Intl.*, 42, 7054-7059 (2016).
- “Bioadsorption of Rare Earth Elements through Cell Surface Display of Lanthanide Binding Tags,” D. Park, D. Reed, M. Yung, A. Eslamimanesh, M. Lencka, A. Anderko, Y. Fujita, R. Riman, A. Navrotsky, and Y. Jiao, *Enviro. Sci. Tech.*, 50, 2735-2742 (2016).
- “The Nanocrystalline $\text{SnO}_2\text{-TiO}_2$ System — Part I: Structural Features,” J. Miagava, A. Rubbens, P. Roussel, A. Navrotsky, R. Castro, D. Gouvea, *J. Am. Ceram. Soc.*, 99, 631-637 (2016)
- “The Nanocrystalline $\text{SnO}_2\text{-TiO}_2$ System — Part II: Surface Energies and Thermodynamic Stability,” J. Miagava, A. da Silva, A. Navrotsky, R. Castro, D. Gouvea, *J. Am. Ceram. Soc.*, 99, 638-644 (2016)
- “Mössbauer Spectral Properties of Yttrium Iron Garnet, $\text{Y}_3\text{Fe}_5\text{O}_{12}$, and its Isovalent and Non-isovalent Yttrium Substituted Solid Solutions,” G. Long, F. Grandjean, X. Guo, A. Navrotsky and R. Kukkadapu, *Inorg. Chem.*, 55, 3413-3418 (2016).
- “Thermochemistry of Rare Earth Perovskites $\text{RE}_{0.67-x}\text{Na}_{3x}\text{TiO}_3$ (RE = La, Ce),” D. Feng, P. S. Maram, A. Mielewczyk-Gryn, and A. Navrotsky, *Amer Miner.*, 101, 1125-1128 (2016).
- “Thermodynamics of Bastnaesite – A Major Rare Earth Ore Mineral,” R. Shivaramaiah, A. Anderko, R. E. Riman, and A. Navrotsky, *Amer. Miner.*, 101, 1129-1134 (2016).

- "Interplay of Confinement and Surface Energetics in the Interaction of Water with Metal-Organic Framework," D. Wu, X. Guo, H. Sun, and A. Navrotsky, *J. Phys. Chem. C.*, 120, 7562-7567 (2016).
- "Synthesis and Thermodynamic Study of Transition Metal Ion (Mn^{2+} , Co^{2+} , Cu^{2+} , Zn^{2+}) Exchanged Zeolites A and Y," L. Wu and A. Navrotsky, *Phys. Chem. Chem. Phys.*, 18, 10116-10122 (2016).
- "Thermodynamic Stability of Transition Metal Substituted $LiMn_{2-x}M_xO_4$ ($M = Cr, Fe, Co,$ and Ni) Spinel," C. Lai, J. Chen, J. Knight, A. Manthiram, and A. Navrotsky, *Phys. Chem. Chem. Phys.*, 17, 1973-1978 (2016).
- "Effect of Synthesis Atmosphere on the Proton Conductivity of Y-Doped Barium Zirconate Solid Electrolytes," M. D. Goncalves, P. S. Maram, A. Navrotsky, and R. Muccillo, *Ceram. Intl.*, 42, 13689-13696 (2016).
- "Direct Calorimetric Verification of Thermodynamic Instability of Lead Halide Perovskites," G. P. Nagabhushana, R. Shivaramaiah, and A. Navrotsky, *Proc. Natl. Acad. Sci. USA*, 113, 7717-7721 (2016).
- "Location and Stability of Europium in Calcium Sulfate and its Relevance to Rare Earth Recovery from Phosphogypsum Waste," R. Shivaramaiah, W. Lee, D. Yu, P. Kim, H. Wu, Z. Hu, R. Riman, A. Anderko, and A. Navrotsky, *Amer. Miner.*, 101, 1854-1861 (2016).
- "Thermodynamic Stability of Low-k Amorphous $SiOCH$ Dielectric Films," J. Chen, S. W. King, E. Muthuswamy, A. Koryttseva, D. Wu, and A. Navrotsky, *J. Am. Ceram. Soc.*, 99, 2752-2759 (2016).
- "Structure and Thermodynamics of Uranium-Containing Iron Garnets," X. Guo, A. Navrotsky, R. K. Kukkadapu, M. H. Engelhard, A. Lanzirotti, M. Newville, E. S. Ilton, S. R. Sutton, and H. Xu, *Geochim. Cosmochim. Acta*, 189, 269-281 (2016).
- "Crystal Structures, Surface Stability and Water Adsorption Energies of La-Bastnasite via Density Functional Theory and Experimental Studies," S. Goverapet Srinivasan, R. Shivaramaiah, P. Kent, A. Stack, A. Navrotsky, R. Riman, A. Anderko, V. Bryantsev, *J. Phys. Chem. C*, 120, 16767-16781 (2016).
- "Thermodynamic Studies of Studtite Thermal Decomposition Pathways via Amorphous Intermediates UO_3 , U_2O_7 , and UO_4 ," X. Guo, D. Wu, H. Xu, P. C. Burns, and A. Navrotsky, *J. Nucl. Mater.*, 478, 158-163 (2016).
- "Energetics of Alkali and Alkaline Earth Ion-Exchanged Zeolite A," H. Sun, D. Wu, K. Liu, X. Guo, and A. Navrotsky, *J. Phys. Chem. C*, 120, 15251-15256 (2016).
- "Distinctive Interactions of Cesium and Hexaniobate in Water," D. J. Sures, S. K. Sahu, P. I. Molina, A. Navrotsky and M. Nyman, *Chem. Sel.*, 1, 1858-1862 (2016).
- "Rare Earth Perovskites along the $CaTiO_3$ - $Na_{0.5}La_{0.5}TiO_3$ Join: Phase Transitions, Formation Enthalpies, and Implications for Loparite Minerals," D. Feng, R. Shivaramaiah, and A. Navrotsky, *Amer. Miner.*, 101, 2051-2056 (2016).
- "Formation of Hydrous Stishovite from Coesite in High-pressure Hydrothermal Environments," K. Spektor, J. Nylén, R. Mathew, M. Eden, E. Stoyanov, A. Navrotsky, K. Leinenweber, and U. Haussermann, *Amer. Miner.*, 101, 2514-2524 (2016).
- "Thermodynamic Complexity of Sulfated Zirconia Catalysts," N. Liu, X. Guo, A. Navrotsky, L. Shi, and D. Wu, *J. Catal.*, 342, 158-163 (2016).
- "Energetics of a Uranothorite ($Th_{1-x}U_xSiO_4$) Solid Solution," X. Guo, S. Szenknect, A. Mesbah, N. Clavier, C. Poinssot, D. Wu, H. Xu, N. Dacheux, R. Ewing and A. Navrotsky, *Chem. Mater.*, 28, 7117-7124 (2016).
- "Structural, Vibrational, and Thermochemical Properties of the Monazite-Type Solid Solution $La_{1-x}Pr_xPO_4$," A. Hirsch, P. Kegler, I. Alencar, J. Ruiz-Fuertes, A. Shelyug, L. Peters, C. Schreinemachers, A. Neumann, S. Neumeier, H.-P. Liermann, A. Navrotsky and G. Roth, *J. Solid State Chem.*, 245, 82-88 (2016).

- “Thermochemistry of Rare Earth Perovskites,” D. Feng, and A. Navrotsky, *MRS Advances*, 1, 2695-2700 (2016).
- “Thermodynamic Properties of Polymorphs of Fluorosulfate Based Cathode Materials with Exchangeable Potassium Ions,” R. Shivaramaiah, L. Lander, G.P. Nagabhushana, G. Rousse, J.-M. Tarascon, and A. Navrotsky, *ChemPhysChem*, 17, 3365-3368 (2016).
- “Structure and Thermodynamic Stability of UTa_3O_{10} , a U(V)-bearing Compound,” X. Guo, C. Lipp, E. Tiferet, A. Lanzirrotti, M. Newville, M. Engelhard, D. Wu, E. Ilton, S. Sutton, H. Xu, P. Burns, and A. Navrotsky, *Dalton Trans.*, 45, 18892-18899 (2016).
- “Thermodynamic Studies of Zippeite, a Uranyl Sulfate Common in Mine Wastes,” M. Sharifionizia, J. Szymanowski, G. Sigmon, A. Navrotsky, J. Fein, and P. Burns, *Chem. Geo.*, 447, 54-58 (2016).
- “Chemical Ordering in Substituted Fluorite Oxides: A Computational Investigation of $Ho_2Zr_2O_7$ and $RE_2Th_2O_7$ (RE=Ho, Y, Gd, Nd, La),” J. M. Solomon, J. Shamblin, M. Lang, A. Navrotsky, and M. Asta, *Sci. Rep.*, 6, 38772: 1-9 (2016).
- “High Temperature Calorimetric Study of Oxide Component Dissolution in a $CaO-MgO-Al_2O_3-SiO_2$ Slag at 1450 °C,” A. Koryttseva and A. Navrotsky, *J. Am. Ceram. Soc.*, 100, 1172 – 1177 (2016).
- “Calorimetric Determination of Thermodynamic Stability of MAX and MXene Phases,” G. Sharma, M. Naguib, D. Feng, Y. Gogotsi, and A. Navrotsky, *J. Phys. Chem. C*, 120, 28131-28137 (2016).
- “Thermochemistry of $La_{1-x}Ln_xPO_4$ -Monazites (Ln = Gd, Eu),” S. Neumeier, P. Kegler, Y. Arinicheva, A. Shelyug, P. M. Kowalski, C. Schreinemachers, A. Navrotsky, and D. Bosbach, *J. Chem. Therm.*, 105, 396-403 (2016).
- “Thermal Annealing of Natural, Radiation-Damaged Pyrochlore,” P. Zietlow, T. Beirau, B. Mihailova, L.A. Groat, T. Chudy, A. Shelyug, A. Navrotsky, R.C. Ewing, J. Schlüter, R. Škoda, U. Bismayer; *Zeitschrift für Kristallographie*, 232, 1-3 (2016).
- “Composition Dependent Order-Disorder Transition in $Nd_xZr_{1-x}O_{2-0.5x}$ Pyrochlores: A Combined Structural, Calorimetric and *ab initio* Modeling Study,” S. Finkeldei, P. Kegler, P. Kowalski, C. Schreinemachers, F. Brandt, A. Bukaemskiy, V. Vinograd, G. Beridze, A. Shelyug, A. Navrotsky and D. Bosbach, *Acta Mater.*, 125, 166-176 (2017).
- “A Combined Experimental and Theoretical Study of Enthalpy of Phase Transition and Fusion of Yttria Above 2000 °C Using ‘Drop-n-Catch’ Calorimetry and First-Principles Calculations,” D. Kapush, S. V. Ushakov, A. Navrotsky, Q. Hong, H. Liu and A. van de Walle, *Acta Mater.*, 124, 204-209 (2017).
- “Formation and Dehydration Enthalpy of Potassium Hexaniobate,” S. K. Sahu, L. A. Boatner, and A. Navrotsky, *J. Am. Ceram. Soc.*, 100, 304-311 (2017).
- “Drop-and-Catch (DnC) Calorimetry Using Aerodynamic Levitation and Laser Heating,” S. V. Ushakov, A. Shvarev, T. Alexeev, D. Kapush, and A. Navrotsky, *J. Am. Ceram. Soc.*, 100, 754-760 (2017).
- “Structure and Thermochemistry of Perrhenate Sodalite and Mixed Guest Perrhenate/Pertechnetate Sodalite,” E. Pierce, K. Lilova, D. Missimer, W. Lukens, J. Fitts, L. Wu, C. Rawn, A. Huq, D. Leonard, J. Eskelsen, B. F. Woodfield, C. Jantzen, and A. Navrotsky, *Enviro. Sci. Tech.*, 51, 997-1006 (2017).
- “Thermodynamics of Manganese Oxides: Sodium, Potassium, and Calcium Birnessite and Cryptomelane,” N. Birkner and A. Navrotsky, *Proc. Natl. Acad. Sci. USA*, 114, E1046-E1053 (2017).
- “Tailoring Mesoporous $\gamma-Al_2O_3$ Properties by Transition Metal Doping: A Combined Experimental and Computational Study,” L. Fu, H. Yang, Y. Hu, D. Wu, and A. Navrotsky, *Chem. Mater.*, 29, 1338-1349 (2017).

- "Hot Matters – Experimental Methods for High-Temperature Property Measurement," A. Navrotsky and S. V. Ushakov, *Am. Ceram. Soc. Bull.*, 96, 22-28 (2017).
- "Structure and Bulk Modulus of Ln-doped UO₂ (Ln = La, Nd) at High Pressure," D. R. Rittman, S. Park, C. L. Tracy, L. Zhang, R. I. Palomares, M. Lang, A. Navrotsky, W. L. Mao, R. C. Ewing, *J. Nucl. Mater* 490, 28-33, (2017).
- "The Role of Ceramic and Glass Science Research in Meeting Societal Challenges: Report from an NSF-Sponsored Workshop," K. T. Faber, T. Asefa, M. Backhaus-Ricoult, R. Brow, J. Chan, S. Dillon, W. Fahrenholtz, M. W. Finnis, J. E. Garay, E. Garcia, Y. Gogotsi, S. M. Haile, J. Halloran, J. Hu, L. Huang, S. Jacobsen, E. Lara-Curizo, J. LeBeau, W. E. Lee, C. G. Levi, I. Levin, J. A. Lewis, D. M. Lipkin, K. Lu, J. Luo, J.-P. Maria, L. W. Martin, S. Martin, G. Messing, A. Navrotsky, N. Padture, C. Randall, G. S. Rohrer, A. Rozenflanz, T. Schaedler, D. Schlom, A. Sehirlioglu, A. Stevensen, T. Tani, V. Tikare, S. Trolrier-McKinstry, H. Wang, and B. Yildiz, *J. Am. Ceram. Soc.*, 100, 1777-1803 (2017).
- "Solid-Liquid Phase Equilibria of Fe-Cr-Al Alloys and Spinels," J. McMurray, R. Hu, S. V. Ushakov, D. Shin, B. Pint, K. Terrani, and A. Navrotsky, *J. Nucl. Mater.*, 492, 128-133 (2017).
- "Experimental and Theoretical Evaluation of the Stability of True MOF Polymorphs Explains Their Mechanochemical Interconversions," Z. Akimbekov, A. Katsenis, G. Nagabhushana, G. Ayoub, M. Arhangelskis, A. Morris, T. Friščić, A. Navrotsky, *J. Am. Chem. Soc.* 139, 7952-7957 (2017)
- "Calorimetric Measurements of Surface Energy of Amorphous HfO₂ Nanoparticles Produced by Gas Phase Condensation," G. Sharma, S. V. Ushakov, H. Li, R. H. R. Castro, and A. Navrotsky, *J. Phys. Chem. C*, 121, 10392-10397 (2017).
- "Calorimetric Study of Alkali Metal Ion (K⁺, Na⁺, Li⁺) Exchange in a Clay-like MXene," G. Sharma, E. Muthuswamy, M. Naguib, Y. Gogotsi, A. Navrotsky, and D. Wu, *J. Phys. Chem. C*, 121, 15145-15153 (2017).
- "A Correlation between Formation Enthalpy and Ionic Conductivity in Perovskite-Structured Li_{3x}La_{0.67-x}TiO₃ Solid Lithium Ion Conductors," X. Guo, P. S. Maram and A. Navrotsky; *J. Matl. Chem A*, 5, 12951-12957 (2017).
- "Reply to Comment by Konings and Plyasunov on 'First Experimental Determination of the Solubility Constant of Coffinite,'" S. Szenknect, N. Dacheux, R. Ewing, A. Navrotsky, *Geochimica et Cosmochimica Acta*, 212, 374-376 (2017).
- "Thermodynamic Stability of SFCA (Silico-Ferrite of Calcium and Aluminum) and SFCA-I Phases," A. Koryttseva, N. Webster, M. Pownceby, and A. Navrotsky, *J. Am. Ceram. Soc.*, 100, 3646-3651 (2017).
- "Structure and Energetics of SiOC and SiOC Modified Carbon-bonded Carbon Fiber Composites," M. Niu, H. Wang, J. Chen, L. Su, D. Wu, and A. Navrotsky, *J. Am. Ceram. Soc.*, 100, 3693-3702 (2017).
- "Thermodynamics of Copper-Manganese and Copper-Iron Spinel Solid Solutions," S. K. Sahu and A. Navrotsky, *J. Am. Ceram. Soc.*, 100, 3684-3692 (2017).
- "Preface to Special Issue of the Journal of Chemical Thermodynamics: Thermodynamics of Nuclear Materials," A. Navrotsky, *J. Chem. Thermo.*, 114, 1 (2017).
- "Thermochemistry of UO₂-ThO₂ and UO₂-ZrO₂ Fluorite Solid Solutions," L. Zhang, A. Shelyug, and A. Navrotsky, *J. Chem. Thermo.*, 114C, 48-54 (2017).
- "Low Temperature Heat Capacity and Thermodynamic Functions of Anion Bearing Sodalites Na₈Al₆Si₆O₂₄X₂ (X = SO₄, ReO₄, Cl, I)," J. Schliesser, K. Lilova, E. M. Pierce, L. Wu, D. M. Missimer, B. F. Woodfield, and A. Navrotsky, *J. Chem. Thermo.*, 114C, 14-24 (2017).
- "Thermochemical Properties of U(VI) Hybrid Materials Containing Uranyl Tetrachloride Anions," C. Cahill, N. P. Deifel, D. Reusser, L. Zhang, and A. Navrotsky, *J. Chem. Thermo.*, 114, 66-70 (2017).

The Structure of Liquid and Amorphous Hafnia,” L.C. Gallington, Y. Ghadar, L.B. Skinner, J.K. Richard Weber, S.V. Ushakov, A. Navrotsky, A. Vazquez-Mayagoita, J.C. Neuefeind, M. Stan, J.J. Low, C.J. Benmore, *Materials*, 10, 1290 (2017).

“Structure and Thermal Expansion of Lu_2O_3 and Yb_2O_3 to the Melting Temperatures,” A. Pavlik, S. V. Ushakov, A. Navrotsky, C. Benmore and R. Weber, *J. Nucl. Mater.*, 495, 385-391 (2017).

“Tunable Low-Density Palladium Nanowire Foams,” D. Gilbert, E. Burks, S.V. Ushakov, P. Abellan, I. Arslan, T. Felter, A. Navrotsky, K. Liu, *Chem. of Matls., Chem. Mater.*, 29, 9814-9818 (2017).

“Heat Capacity and Thermodynamic Functions of Crystalline and Amorphous Forms of the Metal Organic Framework Zinc 2-Ethylimidazolate, $\text{Zn}(\text{EtIm})_2$,” J. Calvin, M. Asplund, Z. Akimbekov, G. Ayoub, A. Katsensis, A. Navrotsky, T. Friscic, B. Woodfield, *J. Chem. Thermo.*, 116, 341-351 (2018).

“Size Driven Thermodynamic Crossovers in Phase Stability in Zirconia and Hafnia,” G. Sharma, S. Ushakov, and A. Navrotsky, *J. Am Ceram Soc.*, 101, 31-35 (2018).

“Thermochemistry of the Simplest Metal Organic Frameworks: Formates $[\text{M}(\text{HCOO})_2] \cdot x\text{H}_2\text{O}$ ($\text{M} = \text{Li}, \text{Mg}, \text{Mn}, \text{Co}, \text{Ni}, \text{and Zn}$),” G. P. Nagabhushana, R. Shivaramaiah, and A. Navrotsky, *J. Chem. Therm.*, 118, 325-330 (2018).

“Combined Experimental and Computational Investigation of Thermodynamics and Phase Equilibria in the CaO-TiO_2 System,” W. Gong, L. Wu, A. Navrotsky; *J. Am Ceram Soc.*, 101, 1361-1370 (2018).

“Structure, Energetics and Bioactivity of Silicon Oxycarbide-based Amorphous Ceramics with Highly Connected Networks,” E. Ionescu, S. Sen, G. Mera, A. Navrotsky, *J. Eur. Ceram. Soc.*, 38, 1311-1319 (2018).

“Thermodynamic Evidence of Flexibility in H_2O and CO_2 Absorption of Transition Metal Ion Exchanged Zeolite LTA,” X. Guo, L. Wu, A. Navrotsky, *Phys. Chem. Chem. Phys.*, 20, 3970-3978 (2018).

“Experimental Heat Capacities, Excess Entropies, and Magnetic Properties of Bulk and Nano $\text{Fe}_3\text{O}_4\text{-Co}_3\text{O}_4$ and $\text{Fe}_3\text{O}_4\text{-Mn}_3\text{O}_4$ Spinel Solid Solutions,” J. Schliesser, B. Huang, S. Sahu, M. Asplund, A. Navrotsky and B. Woodfield, *J. Solid-State Chem.*, 259, 79-90 (2018).

“Experimental Thermochemistry of Neptunium Oxides: Np_2O_5 and NpO_2 ,” L. Zhang, E. Dzik, G. Sigmon, J. Szymanowski, A. Navrotsky, P. Burns, *J. Nucl. Mater.*, 501, 398-404 (2018).

“Thermodynamics of Amorphous $\text{SiN}(\text{O})\text{H}$ Dielectric Films Synthesized by Plasma-enhanced Chemical Vapor Deposition,” J. Chen, M. Niu, J. Calvin, M. Asplund, S. King, B.T. Woodfield and A. Navrotsky, *J. Am. Ceram. Soc.*, 101, 2017-2027 (2018).

“Thermodynamic and Structural Evolution of $\text{Dy}_2\text{Ti}_2\text{O}_7$ Pyrochlore after Swift Heavy Ion Irradiation,” C-K. Chung, J. Shamblin, E. O’Quinn, A. Shelyug, I. Gussev, M. K. Lang, and A. Navrotsky, *Acta Mater.*, 145, 227-234 (2018).

“Nanocrystalline Apatites: The Fundamental Role of Water,” C. Drouet, M. Aufray, S. Rollin-Martinet, N. Vandecandelaère, D. Grossin, F. Rossignol, E. Champion, A. Navrotsky, C. Rey, *Amer. Miner.*, 103, 550-564 (2018)

“Trends in Structure and Thermodynamic Properties of Normal Rare Earth Carbonates and Rare Earth Hydroxycarbonates,” P. Kim, A. Anderko, A. Navrotsky, R. Riman, *Minerals*, 8, 106 (2018).

“Hydration Dynamics in Zeolite A — an X-ray Diffraction and Infrared Spectroscopic Study,” X. Guo, A. Navrotsky, *Microporous Mesoporous Mater.*, 268, 197-201 (2018).

“Energetics of Bulk Lutetium Doped $\text{Ce}_{1-x}\text{Lu}_x\text{O}_{2-x/2}$ Compounds,” N. Yavo, G. Sharma, G. Kimmel, I. Lubomirsky, A. Navrotsky, O. Yeheskel, *J. Am. Ceram. Soc.*, 101, 3520-3526 (2018).

“Thermodynamics of Radiation Induced Amorphization and Thermal Annealing of Dy₂Sn₂O₇ Pyrochlore,” C.K. Chung, M.K. Lang, H. Xu, A. Navrotsky, *Acta Mater*, 155, 386-392 (2018).

“Probing Disorder in Pyrochlore Oxides Using in situ Synchrotron Diffraction from Levitated Solids – A Thermodynamic Perspective,” P.S. Maram, S.V. Ushakov, A. Navrotsky, *Sci. Rep.*, 8, 10658 (2018).

“Heat Capacities, Entropies, and Gibbs Free Energies of Formation of Low-k Amorphous Si(O)CH Dielectric Films and Implications for Stability during Processing,” J. Chen, J. Calvin, M. Asplund, S.W. King, B.F. Woodfield, A. Navrotsky, *J. Chem. Therm.*, 128, 320-335 (2018).

“Surface Energy of Fayalite and its Effect on Fe-Si-O Oxygen Buffers and the Olivine-Spinel Transition,” K. Lilova, M. DeAngelis, L.M. Anovitz, A. Navrotsky, *Amer. Miner.*, 103, 1599-1603 (2018).

“Energetics of Defect Production in Fluorite Structured CeO₂ Induced by Highly Ionizing Radiation,” A. Shelyug, R.I. Palomares, M. Lang, A. Navrotsky, *Phys. Rev. B*, 2, 093607-1 – 093607-13 (2018).

“The Thermodynamics of H₂O and CO₂ Absorption and Guest-induced Phase Transitions in Zeolite RHO,” X. Guo, D.R. Corbin, A. Navrotsky, *J. Phys. Chem C*, 122, 20366-20376 (2018).

“Thermochemical Measurements of Alkali Cation Association to Hexatantalate,” D. Sures, G.P. Nagabhushana, A. Navrotsky, M. Nyman, *Molecules*, 23, 2441 (2018).

“Thermochemistry of BaSm₂O₄ and Thermodynamic Assessment of the BaO-Sm₂O₃ System,” W. Gong, S.V. Ushakov, C. Agca, A. Navrotsky, *J. Am. Ceram. Soc.*, 101, 5827-5835 (2018).

“Combined Computational and Experimental Investigation of High Temperature Thermodynamics and Structure of Cubic ZrO₂ and HfO₂,” Q.-J. Hong, S.V. Ushakov, D. Kapush, C.J. Benmore, R. Weber, A. van de Walle, A. Navrotsky, *Sci. Rep.*, 8, 14962-1 – 14962-11 (2018).

“Phase Transformations in Oxides Above 2000 °C: Experimental Technique Development,” S.V. Ushakov, P.S. Maram, D. Kapush, A.J. Pavlik III, M. Fyhrie, L.C. Gallington, C.J. Benmore, R. Weber, J.C. Neufeind, J.W. McMurray, A. Navrotsky, *Adv. Appl. Ceram.*, 117, 582-589 (2018).

“Thermodynamics and Stability of Rhabdophanes, Hydrated Rare Earth Phosphates REPO₄ · n H₂O,” A. Shelyug, A. Mesbah, S. Szenknect, N. Clavier, N. Dacheux, A. Navrotsky, *Front. Chem.*, 6, 604-1 – 604-11 (2018)

“High Resolution Thermochemical Study of Phase Stability and Rapid Oxygen Incorporation in YBaCo_(4-x)Zn_xO_(7+δ) 114-Cobaltites,” D. Tsvetkov, P.S. Maram, N. Tsvetkova, A. Zuev, A. Navrotsky, *J. Phys. Chem. A*, 122, 9597-9604 (2018).

“Drop Solution Calorimetric Studies of Interface Enthalpy of Cubic Silver(I) Oxide (Ag₂O) Nanocrystals,” K. Al-Essa, A.V. Radha, A. Navrotsky, *Nano Res. Appl.*, 4, Online <https://doi.org/10.21767/2471-9838-C6-025> (2018).

“Thermochemistry of Formation of Ion Exchanged Zeolite RHO,” X. Guo, L. Wu, D.R. Corbin, A. Navrotsky, *Microporous Mesoporous Mater.* 274, 373-378 (2019).

“Rare Earth Sulfates in Aqueous Systems: Thermodynamic Modeling of Binary and Multicomponent Systems over Wide Concentration and Temperature Ranges,” G. Das, M. M. Lenckaa, A. Eslamimanessa, P. Wanga, A. Anderko, R. E. Riman, A. Navrotsky, *J. Chem. Thermodyn.*, 131, 49-79 (2019).

“Compositional Control of Tunnel Features in Hollandite based Ceramics: Structure and Stability of (Ba,Cs)_{1.33}(Zn,Ti)₈O₁₆,” R. Grote, M. Zhao, L. Schuller-Nickles, J. Amoroso, W. Gong, K. Lilova, A. Navrotsky, M. Tang, K. Brinkman, *J. Mater. Sci.*, 54, 1112-1125 (2019).

“Structural and Thermodynamic Mixing Properties of $\text{La}_{(1-x)}\text{Nd}_{(x)}\text{PO}_4$ Monazite-type Solid Solutions,” H. Schlenz, J. Dellen, P. Kegler, C. Gatzen, C. Schreinemachers, A. Shelyug, M. Klinkenberg, A. Navrotsky, D. Bosbach, *J. Solid State Chem.*, 270, 470-478 (2019).

“Structural and Thermodynamic Limits of Layer Thickness in 2D Halide Perovskites” C.M.M. Soe, G.P. Nagabhushana, R. Shivaramaia, H. Tsai, W. Nie, J.C. Blancon, F. Melkonyan, D.H. Cao, B. Traoré, L. Pedesseau, M. Kepenekian, C. Katan, J. Even, T.J. Marks, A. Navrotsky, A.D. Mohite, C.C. Stoumpos, M.G. Kanatzidis, *Proc. Natl. Acad. Sci.*, 116, 58-66 (2019).

“Calorimetric Study of the Thermodynamic Properties of Mn_5O_8 ,” P. Zhang, J. Liu, K. Page, A. Navrotsky, *J. Am. Ceram. Soc.*, 102, 1394-1401 (2019).

“Thermodynamic Stability of the Fluorite Phase in the CeO_2 - CaO - ZrO_2 System,” A. Shelyug, A. Navrotsky, *J. Nucl. Mater.*, 517, 80-85 (2019).

“Bio- and Mineral Acid Leaching of Rare Earth Elements from Synthetic Phosphogypsum,” P.J. Antonick, Z. Hu, Y. Fujita, D.W. Reed, G. Das, L. Wu, R. Shivaramaiah, P. Kim, A. Eslamimanesh, M.M. Lencka, Y. Jiao, A. Anderko, A. Navrotsky, E. Riman, *J. Chem. Thermodyn.*, 132, 491-496 (2019).

“Energetics of Melting of Yb_2O_3 and Lu_2O_3 from Drop and Catch Calorimetry and First Principles Computations,” M. Fyhrrie, Q.J. Hong, D. Kapush, S.V. Ushakov, H. Liu, A. van de Walle, A. Navrotsky, *J. Chem. Thermodyn.*, 132, 405-410 (2019).

“Review of Surface Water Interactions with Metal Oxide Nanoparticles,” J. Calvin, P. Rosen, N. Ross, A. Navrotsky, B. Woodfield, *J. Mater. Res.*, 34, 416-427 (2019).

“ TiO_2 Surface Engineering to Improve Nanostability: The Role of Interface Segregation,” A.L. da Silva, D. Mucche, L. Caliman, J. Bettini, R. Castro, A. Navrotsky, D. Gouvea, *J. Phys. Chem. C*, 123, 4949-4960 (2019).

“Lithium Aluminum Layered Double Hydroxide Chlorides (LDH): Formation Enthalpies and Energetics of Lithium Ion Capture,” L. Wu, L. Li, S.F. Evans, T.A. Eskander, B.A. Moyer, Z. Hu, S. Harrison, M. P. Paranthaman, R. Riman, A. Navrotsky, *J. Am. Ceram. Soc.*, 102, 2398-2404 (2019).

“Thermodynamics of Reaction between Gas-Turbine Ceramic Coatings and Ingested CMAS Corrodents,” G.C.C. Costa, B.J. Harder, V.L. Wiesner, D. Zhu, N. Bansal, K.N. Lee, N.S. Jacobson, D. Kapush, S.V. Ushakov, A. Navrotsky, *J. Am. Ceram. Soc.*, 102, 2948-2964 (2019).

“Mechanochemical Synthesis, Accelerated Aging and Thermodynamic Stability of the Organic Mineral Pateite and its Cadmium Analogue,” S. Li, I Huskic, N. Novendra, H.M. Titi, A. Navrotsky, T. Friscic, *ACS Omega*, 4, 5486-5495 (2019).

“Compositional Control of Radionuclide Retention in Hollandite-based Ceramic Waste Forms for Cs Immobilization,” M. Zhao, Y. Xu, L. Shuller-Nickles, J. Amoroso, A. Frenkel, Y. Li, W. Gong, K. Lilova, A. Navrotsky, K. Brinkman, *J. Am. Ceram. Soc.*, 102, 4314-4324 (2019)

“Energetics of Ethanol and Carbon Dioxide Adsorption on Anatase, Rutile and γ -Alumina Nanoparticles,” L. Wu, X. Guo, A. Navrotsky, *Amer. Miner.*, 104, 686-693 (2019).

“Functionality in Metal-Organic Framework Minerals: Proton Conductivity, Stability and Potential for Polymorphism,” I. Huskić, N. Novendra, D.W. Lim, F. Topić, H.M. Titi, I.V. Pekov, S.V. Krivovichev, A. Navrotsky, H. Kitagawa, T. Friscic, *Chem. Sci.* 10, 4923-4929 (2019).

“Sample Seal-and-Drop Device and Methodology for High Temperature Oxide Melt Solution Calorimetric Measurements of PuO_2 ,” X. Guo, H. Boukhalfa, J. Mitchell, M. Ramos, A. Gaunt, A. Migliori, R. Roback, A. Navrotsky, H. Xu, *Rev. Sci. Instrum.*, 90, 044101-1 - 7 (2019).

“Thermochemical Investigation of Lithium Borate Glasses and Crystals,” L. Wu, A. Koryttseva, C.B.M. Groß, A. Navrotsky, *J. Am. Ceram. Soc.*, 102, 4538-4545 (2019).

- "In Situ Determination of the HfO₂-Ta₂O₅ Temperature Phase Diagram up to 3000 °C," S. McCormack, K.P. Tseng, R. Weber, D. Kapush, S.V. Ushakov, A. Navrotsky, W.M. Kriven, *J. Am. Ceram. Soc.*, 102, 4848-4861 (2019).
- "Adsorption Mechanism of Alkyl Hydroxamic Acid onto Bastnäsite: Fundamental Steps toward Rational Collector Design for Rare Earth Elements," A. Wanhala, B. Doughty, V. Bryantsev, L. Wu, S. Mahurin, M. Cheshire, S. Jansone-Popova, A. Navrotsky, A. Stack, *J. Colloid Interface Sci.*, 553, 210-219 (2019).
- "New Developments in Calorimetry of High-Temperature Materials," A. Navrotsky, *Engineering*, 5, 366-371 (2019).
- "Theoretical Prediction and Experimental Evaluation of Topological Landscape and Thermodynamic Stability of a Fluorinated Zeolitic Imidazolate Framework," M. Arhangelskis, A. Katsensis, N. Novendra, Z. Akimbekov, G. Dayaker, J. Marrett, G. Ayoub, A. Morris, O. Farha, A. Navrotsky, T. Friscic, *Chem. Mater.*, 31, 3777-3783 (2019).
- "Enthalpies of Formation and Phase Stability Relations of USi, U₃Si₅ and U₃Si₂," C.K. Chung, X. Guo, G. Wang, T.L. Wilson, J.T. White, A.T. Nelson, A. Shelyug, H. Boukhalfa, P. Yang, E.R. Batista, A.A. Migdisov, R. C. Roback, A. Navrotsky, H. Xu, *J. Nucl. Mater.*, 523, 101-110 (2019).
- "Metal-Catalyst-Free Access to Multiwall Carbon Nanotubes/Silica Nanocomposites (MWCNT/SiO₂) from a Single-source Precursor," G. Mera, P. Kroll, I. Ponomarev, J. Chen, K. Morita, M. Liesegang, E. Ionescu, A. Navrotsky, *Dalton Trans.*, 48, 11018-11033 (2019).
- "Thermochemistry of Surfactant-Templating of USY Zeolite," N. Linares, E. Jardim, G. Sharma, E. Serrano, A. Navrotsky, J. Garcia-Martinez, *Chem. Eur. J.*, 25, 10045-10048 (2019).
- "Energetics of Porous Amorphous Low-k SiOCH Dielectric Films," J. Chen, J.J. Calvin, M. Asplund, S.W. King, B.F. Woodfield, A. Navrotsky, *J. Chem. Thermodyn.*, 139, 105885 1-15 (2019).
- "Synthesis, Crystal Structure and Enthalpies of Formation of Churchite-type REPO₄·2H₂O (RE = Gd to Lu) Materials," T. Subramani, M.R. Rafiuddin, A. Shelyug, S. Ushakov, A. Mesbah, N. Clavier, D. Qin, S. Szenknect, E. Elkaim, N. Dacheux, A. Navrotsky, *Cryst. Growth Des.*, 19, 4641-4649 (2019).
- "Polymer-Derived Ultra-High Temperature Ceramics (UHTCs) and Related Materials," E. Ionescu, S. Bernard, R. Lucas, P. Kroll, S. Ushakov, A. Navrotsky, R. Riedel, *Adv. Eng. Mater.*, 21, 1900269 (1-24) (2019).
- "Neutron Spectroscopic and Thermochemical Characterization of Lithium–Aluminum Layered Double Hydroxide Chloride: Implications for Lithium Recovery," L. Wu, S.F. Evans, Y. Cheng, A. Navrotsky, B.A. Moyer, S. Harrison, M.P. Paranthaman, *J. Phys. Chem. C*, 123, 20723-20729 (2019).
- "Heat Capacity and Thermodynamic Functions of Crystalline Forms of the Metal-Organic Framework Zinc 2-methylimidazolate, Zn(Melm)₂," P.F. Rosen, J.J. Calvin, M. Dickson, A.D. Katensis, T. Friscic, A. Navrotsky, N. Ross, A. Kolesnikov, B.F. Woodfield, *J. Chem. Thermodyn.*, 136, 160-169 (2019).
- "Reply to Comments 'In-situ Determination of the HfO₂-Ta₂O₅ Temperature Phase Diagram up to 3000 °C'," S. McCormack, K.P. Tseng, R. Weber, S.V. Ushakov, A. Navrotsky, W.M. Kriven, *J. Am. Ceram. Soc.*, 102, 7028-7030 (2019).
- "Carbides and Nitrides of Zirconium and Hafnium," S.V. Ushakov, A. Navrotsky, Q.-J. Hong, A. van de Walle, *Materials*, 12, 2728, 1-23 (2019).
- "Energetics, Structures, and Phase Transitions of Cubic and Orthorhombic Cesium Lead Iodide (CsPbI₃) Polymorphs," B. Wang, N. Novendra, A. Navrotsky, *J. Am. Chem. Soc.*, 141, 14501-14504 (2019).
- "Energetics of Hydration on Uranium Oxide and Peroxide Surfaces," X. Guo, D. Wu, S. Ushakov, T. Shvareva, H. Xu, A. Navrotsky, *J. Mater. Res.*, 34, 3319-3325 (2019).

- “Thermodynamics of $Zn_xMn_{3-x}O_4$ and $Mg_{1-z}Cu_zCr_2O_4$ Spinel Solid Solutions,” K. Lilova, G. Sharma, S. Hayun, D.P. Shoemaker, A. Navrotsky, *J. Mater. Res.*, 34, 3305-3311 (2019).
- “Thermodynamics of $BaNd_2O_4$ and Phase Diagram of the $BaO-Nd_2O_3$ System,” W. Gong, A. Navrotsky, *J. Mater. Res.*, 34, 3337-3342 (2019).
- “Enthalpies of Formation of the Solid Solutions of $Zr_xY_{0.5-x/2}Ta_{0.5-x/2}O_2$ ($0 \leq x \leq 0.2$ and $0.65 \leq x \leq 1$),” M. Lepple, K. Lilova, C. Levi, A. Navrotsky, *J. Mater. Res.*, 34, 3343-3350 (2019).
- “The Structure and Thermochemistry of $K_2CO_3-MgCO_3$ Glass,” M.C. Wilding, B.L. Phillips, M. Wilson, G. Sharma, A. Navrotsky, P.A. Bingham, R. Brooker, J.B. Parise, *J. Mater. Res.*, 34, 3377-3388 (2019).
- “Synthesis and Thermodynamics of Transition Metal Oxide Based Sodium Ion Cathode Materials,” R. Shivaramaia, S. Tallapragada, GP Nagabhushana, A. Navrotsky, *J. Solid State Chem.*, 280, 121011 (2019).
- “Thermodynamic and Structural Evolution of Mechanically Milled and Swift Heavy Ion Irradiated $Er_2Ti_2O_7$ Pyrochlore,” C.K. Chung, E. C. O’Quinn, J.C. Neufeind, A.F. Fuentes, H. Xu, M. Lang, A. Navrotsky, *Acta Mater.*, 181, 309-317 (2019).
- “Energetics of Formation and Disorder in Rare Earth Weberite RE_3TaO_7 Materials,” T. Subramani, A. Navrotsky, *Inorganic Chemistry*, 58, 16126-16133 (2019).
- “Mechanical and Structural Properties of Radiation-Damaged Allanite-(Ce) and the Effects of Thermal Annealing,” C.E. Reissner, U. Bismayer, D. Kern, M. Reissner, S. Park, J. Zhang, R.C. Ewing, A. Shelyug, A. Navrotsky, C. Paulmann, R. Škoda, L.A. Groat, H. Pöllmann, T. Beirau, *Phys. Chem. Miner.*, 46, 921-933 (2019).
- “Avalanches During Recrystallization in Radiation-Damaged Pyrochlore and Allanite: Statistical Similarity to Phase Transitions in Functional Materials,” T. Beirau, A. Shelyug, A. Navrotsky, H. Pollmann, E.K.H. Salje, *Appl. Phys. Lett.*, 115, 231904, 1-5 (2019).
- “A Geologic Si-O-C Pathway to Incorporate Carbon in Silicates,” A. Navrotsky, J. Percival, L. Dobrzhinetskaya, Y. Lin in “Carbon in Earth’s Interior,” C.E. Manning Ed., *Amer. Geophys. Union Monograph*, Chapter 5, pp. 47-54 (2020).
- “Thermochemistry of the ZrO_2-SrO System: From Enthalpies of Formation and Heat Capacities of the Compounds to the Phase Diagram,” W. Gong, Y. Xie, Z. Zhao, Y. Li, A. Navrotsky, *J. Am. Ceram. Soc.*, 103, 1425-1435 (2020).
- “The Thermodynamics of Gas Absorption and Guest-induced Flexibility in Zeolite Y,” X. Guo, P. Zhang, A. Navrotsky, *Microporous Mesoporous Mater.*, 294, 109893 (2020).
- “Thermochemistry of Cation-Disordered Li ion Battery Cathode Materials, $Li_{1+x}M'_xM''_{1-2x}O_2$ ($M' = Nb$ and Ta , $M'' = Mn$ and Fe),” T. Subramani, A. Navrotsky, *RSC Advances*, 10, 6540-6546 (2020).
- “Thermodynamic Evidence of Structural Transformations in the CO_2 -Loaded Metal Organic Framework $Zn(Melm)_2$ from Heat Capacity Measurements,” P. Rosen, M. Dickson, J. Calvin, N. Ross, T. Friscic, A. Navrotsky, B. Woodfield, *J. Am. Chem. Soc.*, 142, 4833-4841 (2020).
- “Quantifying Oxygen Vacancies in Neodymium and Samarium Doped Ceria from Heat Capacity Measurements,” G. Neilsen, P. Rosen, M. Dickson, M. Popovic, J. Schliesser, L. Hansen, A. Navrotsky, B. Woodfield, *Acta Materialia*, 108, 740-744 (2020).
- “Thermodynamic Assessment of $BaO - Ln_2O_3$ ($Ln = La, Pr, Eu, Gd, Er$) Systems,” W. Gong, Y. Liu, Y. Xie, Z. Zhao, S.V. Ushakov, A. Navrotsky, *J. Am. Ceram. Soc.*, 103, 3896-3904 (2020).
- “Thermodynamic Studies of Bromide Incorporation into Cesium Lead Iodide ($CsPbI_3$),” B. Wang, A. Navrotsky, *J. Phys. Chem. C*, 124, 8639-8642 (2020).

- "Hydration Structure and Water Exchange Kinetics at Xenotime-water Interfaces: Implications for Rare Earth Minerals Separation," S. Roy, L. Wu, S.G. Srinivasan, A.G. Stack, A. Navrotsky, V.S. Bryantsev, *Phys. Chem. Chem. Phys.*, 22, 7719-7727 (2020).
- "Steam-Induced Coarsening of Single-Unit-Cell MFI Zeolite Nanosheets and its Effect on External Surface Brønsted Acid Catalysis," Y. Guefrachi, G. Sharma, D. Xu, G. Kumar, K.P. Vinter, O.A. Abdelrahman, X. Li, S. Alhassan, P.J. Dauenhauer, A. Navrotsky, W. Zhang, and M. Tsapatsis, *Angew. Chem. Int. Ed.*, 59, 9579-9585 (2020).
- "Molecular Recognition at Mineral Surfaces for Improved Recovery of Rare Earth Ores," J. Sutton, S. Roy, A. Chowdhury, L. Wu, A. Wanhala, N. De Silva, S. Jansone-Popova, B. Hay, M. Cheshire, T. Windus, A. Stack, A. Navrotsky, B. Moyer, B. Doughty, V. Bryantsev, *ACS Appl. Mater. Interfaces*, 12, 16327-16341 (2020).
- "Thermochemistry of Rare Earth Oxyhydroxides, REOOH (RE = Eu to Lu)," S. Yang, M. Powell, J.W. Kolis, A. Navrotsky, *J. Solid State Chem.*, 287, 131244 (2020).
- "Systematic Water Uptake Energetics of Yttrium Doped Barium Zirconate - A High Resolution Thermochemical Study," M. Goncalves, A. Mielewczyk-Gryn, P. Maram, L. Kryscio, M. Gazda, A. Navrotsky, *J. Phys. Chem. C*, 124, 11308-11316 (2020).
- "Energetic Insights into the Crystallization of Lanthanum Carbonate Amorphous Precursors," A. Koryttseva, A. Navrotsky, *Thermochim. Acta*, 688, 178605 (2020).
- "*In Situ* High Temperature Synchrotron Diffraction Studies of (Fe, Cr, Al)₃O₄ Spinels," C. Agca, J.C. Neufeind, J.W. McMurray, J. Liu, C.J. Benmore, R.J.K. Weber, A. Navrotsky, *Inorg. Chem.*, 59, 5949-5957 (2020).
- "Thermodynamics Drives the Stability of the MOF-74 Family in Water," A. Voskanyan, V. Goncharov, N. Novendra, X. Guo, A. Navrotsky, *ACS Omega*, 5, 13158-13163 (2020).
- "Entropy Stabilization of TiO₂-Nb₂O₅ Wadsley-Roth Shear Phases and their Prospects for Lithium Ion Battery Anode Materials," A. Voskanyan, M. Abramchuk, A. Navrotsky, *Chem. Mater.*, 32, 5301-5308 (2020).
- "Energetics of CO₂ and H₂O Adsorption on Alkaline Earth Metal Doped TiO₂," A.L. DaSilva, L. Wu, L. Caliman, R. Castro, A. Navrotsky, D. Gouvea, *Phys. Chem. Chem. Phys.*, 22, 15600-15607 (2020).
- "Melting Temperature Measurement of Refractory Oxide Ceramics as a Function of Oxygen Fugacity using Containerless Methods," C. Agca, J.C. Neufeind, J.W. McMurray, R.J.K. Weber, A. Navrotsky, *J. Am. Ceram. Soc.*, 103, 4867-4875 (2020).
- "Thermal Analysis of High Entropy Rare Earth Oxides," S. Ushakov, S. Hayun, W. Gong, A. Navrotsky, *Materials*, 13, 3141-3159 (2020).
- "Conductivity, Structure, and Thermodynamics of Y₂Ti₂O₇-Y₃NbO₇ Solid Solutions," P. Winiarz, A. Mielewczyk-Gryń, K. Lilova, S. Wachowski, T. Subramani, M. Abramchuk, E. Dzik, A. Navrotsky, M. Gazda, *Dalton Trans.*, 49, 10839-10850, (2020).
- "Development of High Temperature Oxide Melt Solution Calorimetry for p-Block Element Containing Materials," M. Abramchuk, K. Lilova, T. Subramani, R. Yoo, A. Navrotsky, *J. Mater. Res.*, 35, 2239-2246 (2020).
- "A Synergistic Approach to Unraveling the Thermodynamic Stability of Binary and Ternary Chevrel-Phase Sulfides," K. Lilova, J. Perryman, N. Singstock, M. Abramchuk, T. Subramani, A. Lam, R. Yoo, J. Ortiz-Rodriguez, C. Musgrave, A. Navrotsky, J. Velazquez, *Chem. Mater.* 32, 7044-7051 (2020).

"Disorder in $\text{Ho}_2\text{Ti}_{2-x}\text{Zr}_x\text{O}_7$: Pyrochlore to Defect Fluorite Solid Solution Series," D. Drey, E. O'Quinn, T. Subramani, K. Lilova, G. Baldinozzi, I. Gushev, A.F. Fuentes, J. Neuefeind, M. Everett, D. Sprouster, A. Navrotsky, R. Ewing, M. Lang. *RSC Advances*, 10, 34632-34650 (2020).

"Thermochemistry of Nitrogen-Doped Reduced Graphene Oxides," S. Sandoval, E. Muthuswamy, J. Chen, A. Fuentès, G. Tobias, A. Navrotsky, *J. Eur. Ceram. Soc.*, 40, 6322-6327 (2020).

"Greigite (Fe_3S_4) is Thermodynamically Stable: Implications for its Terrestrial and Planetary Occurrence," T. Subramani, K. Lilova, A. Abramchuk, K. Leinenweber and A. Navrotsky. *Proc. Natl. Acad. Sci.*, 117, 28645–28648 (2020).

"Energetics of Salt-Bearing Sodalites $\text{Na}_8\text{Al}_6\text{Si}_6\text{O}_{24}\text{X}_2$ ($\text{X} = \text{SO}_4, \text{ReO}_4, \text{Cl}, \text{I}$): Treatment Option for Pertechnetate-Enriched Nuclear Waste Streams," K. Lilova, E.M. Pierce, L. Wu, A. Jubb, P. Eckert, T. Subramani, A. Navrotsky. *ACS Earth Space Chem.*, 4, 2153–2161 (2020).

"Synthesis, Characterization, and Enthalpies of Formation of Uranium Substituted Zirconolites," T. Subramani, J. Baker, H. Xu, A. Navrotsky, *ACS Earth Space Chem.*, 4, 1878-1887 (2020).

"Thermochemical Insights into Stability and Hydration of Ion-Exchanged Zeolite ZK-5 (KFI Framework)," S. Yang, X. Guo, A. Verma, M. Shiflett, D. Corbin, A. Navrotsky. *J. Phys. Chem. C*, 124, 26192-26202 (2020).

"Effects of Al:Si and (Al+Na):Si Ratios on the Properties of the International Simple Glass, Part I: Physical Properties," J. T. Reiser, X. Lu, B. Parruzot, H. Liu, T. Subramani, H. Kaya, R. Kissinger, J.V. Crum, J.V. Ryan, A. Navrotsky, S.H. Kim, J.D. Vienna, *J. Am. Ceram. Soc.*, 104, 167-182 (2021).

"Thermodynamics of High Entropy Oxides," S. McCormack and A. Navrotsky, *Acta Mater.*, 202, 1-21 (2021).

"Drop Solution Calorimetric Studies of Interface Enthalpy of Cubic Silver (I) Oxide (Ag_2O) Nanocrystals," K. Al-Essa, A.V. Radha, A. Navrotsky. *Key Eng. Mater.*, 878, 73-80 (2021).

"Thermochemistry and Phase Stability of the Polymorphs of Yttrium Tantalate, YTaO_4 ," M. Lepple, S. Ushakov, K. Lilova, C. A. Macauley, A.N. Fernandez, C.G. Levi, A. Navrotsky. *J. Eur. Ceram. Soc.*, 41, 1629-1638 (2021).

"Experimental and Computational Studies of Melting of the Spinel Phase in the Fe-Al-O Ternary System," C. Agca, G. Lindwall, J.W. McMurray, J.C. Neuefeind, Z.K. Liu, A. Navrotsky, *Calphad*, 70, 101798, <https://doi.org/10.1016/j.calphad.2020.101798> (2020).

"Enthalpies of Formation of High Entropy and Multicomponent Alloys using Oxide Melt Solution Calorimetry," S. Hayun, K. Lilova, S. Salhov, A. Navrotsky, *Intermetallics*, 125, 106897, <https://doi.org/10.1016/j.intermet.2020.106897> (2020).

"Formation and Energetics of Amorphous Rare Earth (RE) Carbonates in the $\text{RE}_2\text{O}_3 - \text{CO}_2 - \text{H}_2\text{O}$ System," A. Koryttseva, A. Navrotsky, *Thermochim. Acta*, 692, 178753, <https://doi.org/10.1016/j.tca.2020.178753> Online (2020).

"Thermodynamics of Cesium Lead Halide (CsPbX_3 , $\text{X} = \text{I}, \text{Br}, \text{Cl}$) Perovskites," B. Wang and A. Navrotsky, *Thermochim. Acta*, <https://doi.org/10.1016/j.tca.2020.178813> Online (2020).

"Heat Capacity and Thermodynamic Functions of Partially Dehydrated Sodium and Zinc Zeolite A (LTA)," M. Dickson, P. Rosen, G. Neilsen, J. Calvin, A. Navrotsky, B. Woodfield, *Am. Mineral.*, <https://doi.org/10.2138/am-2021-7726> Online (2020).

"Linker Substituents Control Thermodynamic Stability in Metal-Organic Frameworks," N. Novendra, J. Marrett, A. Katsenis, H. Titi, M. Arhangelskis, T. Frišćić, A. Navrotsky. *J. Am. Chem. Soc.* <https://doi.org/10.1021/jacs.0c09284> Online (2020).

"Cooperative Formation of Porous Silica and Peptides on the Prebiotic Earth," A. Navrotsky, R. Hervig, J. Lyons, D.-K. Seo, E. Shock, A. Voskanyan. *Proc. Natl. Acad. Sci. U.S.A.*, In Press (2020).

"Shear Pleasure: The Structure, Formation Mechanisms, and Thermodynamics of Crystallographic Shear Phases," A. Voskanyan and A. Navrotsky. *Annual Review of Materials Research*, In Press (2020).

"Polymorphism and Structure-Stability Relationships of Zeolitic Imidazolate Frameworks: From Fundamentals to New Applications," H. Titi, J. Marrett, M. Arhangelskis, A. Morris, A. Navrotsky, R. Rogers, T. Friscic, *Acc. Chem. Res.*, Submitted (2020).

"Thermodynamics of Fluorite-Structured Oxides Relevant to Nuclear Energy: A Review," A. Shelyug and A. Navrotsky, *ACS Earth Space Chem.*, Submitted (2020).

"Characterization of Structural Changes in Modern and Archaeological Burnt Bone: Implications for Differential Preservation Bias," G. Gallo, M. Fyhrie, C. Paine, S. Ushakov, M. Izuho, G. Byambaa, N. Zwyns, A. Navrotsky. *PLoS ONE*, Submitted (2020).

"Energetics of the Local Environment of Structure Directing Agents Influence Zeolite Synthesis," S. Zones, J. Kumar, D. Xie, A. Navrotsky. *Chem. Mater.*, Submitted (2020).

"Structure-Property and Thermodynamic Relationships in Rare Earth (Y, Eu, Pr) Iridate Pyrochlores," T. Nenoff, D. Rademacher, M. Rodriguez, Mark; Sandia National Laboratories, T. Garino, T. Subramani, A. Navrotsky. *TBD.*, **to be submitted** (2020)

"Cryogenic Heat Capacity Measurements and Thermodynamic Analysis of Lithium Aluminum Layered Double Hydroxides (LDHs) with Intercalated Chloride," K. Jayanthi, G. Neilsen, P.F. Rosen, C.I. Anderson, M.S. Dickson, S.F. Evans, M.P. Paranthaman, B.F. Woodfield, A. Navrotsky. *American Mineralogist*, Submitted (2020).

"Luminescent Sensing of Lanthanides Extracted from Coal Fly Ash," C. Ma, P. Antonick, J. Kosinski, Y. Fujita, M. Lencka, A. Anderko, L. Wu, J. Kumar, P. Kim, A. Navrotsky, D. Reed, D. Park, Y. Jiao, R. Riman. *Int. J. Rare Earths*, Submitted (2020).

"Heat Capacities and Thermodynamic Functions of Neodymia and Samaria Doped Ceria," G. Neilsen, P.F. Rosen, M.S. Dickson, M. Popovic, J. Schliesser, L.D. Hansen, A. Navrotsky, B. Woodfield. *J. Chem. Thermodyn.*, Submitted (2020).

"Insight on the Stability of Thick Layers in 2D Ruddlesden-Popper and Dion-Jacobson Lead Iodide Perovskites," E. Vasileiadou, B. Wang, I. Spanopoulos, I. Hadar, A. Navrotsky, M. Kanatzidis. *J. Am. Chem. Soc.* Submitted (2020).

BOOKS EDITED, REVIEWED, AND MISCELLANEOUS OTHER PUBLICATIONS:

"Thermodynamics of Minerals and Melts," R. C. Newton, B. J. Wood, and A. Navrotsky, Eds., Vol. I. "Advances in Physical Geochemistry," *Springer-Verlag*, New York, 304 p. (1981).

"Structure and Bonding in Crystals," Vol. I and II, M. O'Keeffe and A. Navrotsky, Eds., *Academic Press*, New York (1981).

"Acceptance of the Mineralogical Society of America Award for 1981," A. Navrotsky, *Amer. Miner.*, 67, 631-632 (1982).

"Phase Theory: The Thermodynamics of Heterogeneous Equilibria," A. Navrotsky, *Geochim. Cosmochim. Acta*, 46, 1321 (1982).

"Microscopic to Macroscopic - Atomic Environments to Mineral Thermodynamics," S. W. Kieffer and A. Navrotsky, Eds., "Reviews in Mineralogy," P. H. Ribbe, Series Ed., *Mineralogical Society of America*, Chantilly, VA, 14, 428 p. (1985).

"Perovskite - A Structure of Great Interest to Geophysics and Materials Science," A. Navrotsky and D. J. Weidner, Eds., *American Geophysical Union*, Washington, D.C. (1989).

"Reactivity of Solids - Proceedings of the 11th International Symposium, Princeton University, U.S.A., June 19-24, 1988." M. S. Whittingham, S. Bernasek, A. J. Jacobson, and A. Navrotsky, Eds., *Elsevier*, North Holland, Amsterdam (1989).

"Presentation of the Mineralogical Society of America Award for 1989 to Michael A. Carpenter," A. Navrotsky, *Amer. Miner.*, 75, 718 (1990).

"Academic Earth Science in Transition," A. Navrotsky, *Eos, Transactions American Geophysical Union*, 74, 552 (1993).

"Physics and Chemistry of Earth Materials," A. Navrotsky, *Cambridge University Press*, Cambridge, UK, 432 pp. (1994).

"Presentation of 1994 Mineralogical Society of America Award to Ronald E. Cohen," A. Navrotsky, *Amer. Miner.*, 79, 589-604 (1994).

"Presentation of the Mineralogical Society of America Award for 1994 to Ronald E. Cohen," A. Navrotsky, *Amer. Miner.*, 80, 854 (1995).

"Conversation - Alexandra Navrotsky with Victoria Milne," A. Navrotsky, *Glass*, 63, 12-16 (Summer 1996).

"Thermodynamics of Crystals," A. Navrotsky, *Eos*, 80, 143 (1999) (book review).

"Microscopic to Macroscopic: Opportunities in Mineral and Rock Physics and Chemistry," Report of a Workshop in Scottsdale, AZ, May 28-30, 1999," A. Navrotsky (1999).

Review of "Physics Meets Mineralogy," A. Navrotsky, in "Condensed-Matter Physics in Geosciences" H. Aoki, Y. Syono, and R. J. Hemley, Eds., Cambridge, New York: *Cambridge University Press*, 397 (2000).

"Nanoparticles and the Environment" in "Review in Mineralogy and Geochemistry" J. F. Banfield and A. Navrotsky, Eds., *Mineralogical Society of America and the Geochemical Society*, Washington, D.C., 44, 349 pp. (2001).

"Review of *Physics Meets Mineralogy: Condensed-Matter Physics in Geosciences*," A. Navrotsky, *Meteoritics Plan. Sci.*, 36, 859-861 (2001).

"Perovskite Materials: Symposium Held April 1-5, 2002, San Francisco, CA, USA" R. Wentzcovitch, A. Navrotsky, and K. Poeppelmeier, Eds., *Materials Research Society Symposium Proceedings*, 718 (2002).

"Report of the Nanogeoscience Workshop – Berkeley, CA (June 14-16, 2002)," A. Navrotsky, Internal Report to NSF (2002).

"Preface," R. Wentzcovitch, A. Navrotsky, and K. Poeppelmeier, *Materials Research Society Symposium Proceedings*, 718 (Perovskite Materials), xi (2002).

"An Interview with Alexandra Navrotsky – Winner of the 2002 Benjamin Franklin Prize in Earth Science," Interview recorded Dec. 5, 2002 by Mitch Schulte, *Newsletter of the Geochemical Society*, 115, 16-21 (April, 2003).

"Materials and Nanotechnology," A. Navrotsky, *Mat. Res. Soc. Bull.*, 92-94, February 2003 (2003)

"The New Generation of American Scholars and the Structure of the University," C. Gonzalez, D. A. Niemeier, A. Navrotsky, *Academe*, 56-60 (2003)

"Zeolites: Ordered, Disordered, Collapsed," A. Navrotsky, *Nat. Mater.*, 2, 571-572 (2003)

"Materials and Nanotechnology," A. Navrotsky, *Journal of the Franklin Institute*, 340, 263-268 (2003).

"Presentation of the Roebling Medal for 2003 of the Mineralogical Society of America to Charles T. Prewitt" A. Navrotsky, *Amer. Miner.*, 89, 898-899 (2004).

"Materials Fundamentals of Gate Dielectrics," A. A. Demkov and A. Navrotsky, Eds., *Springer*, New York (2005).

"Presentation of the Mineralogical Society of America Dana Medal for 2006 to Rodney C. Ewing," A. Navrotsky, *Amer. Miner.*, 91, 1711 (2006).

"Size-Driven Structural and Thermodynamic Complexity in Iron Oxides," A. Navrotsky, L. Mazeina, and J. Majzlan, *Science*, 319, 1635-1638 (2008).

"Materials Science of High-Level Nuclear Waste Immobilization," W. J. Weber, A. Navrotsky, S. Stefanovsky, E. R. Vance, and E. Vernaz, *Mat. Res. Soc. Bull.* 34, 46-53 (2009).

"Geochemistry of Geologic CO₂ Sequestration" in "Review in Mineralogy and Geochemistry" D. J. DePaolo, D. R. Cole, A. Navrotsky, and I. C. Bourg, Eds., J. F. Banfield and A. Navrotsky, Eds., *Mineralogical Society of America and the Geochemical Society*, Washington, D.C., 77, 539 pp. (2013).

"Independent Assessment of Science and Technology for the Department of Energy's Defense Environmental Cleanup Program," P. J. Culligan, M. J. Plodinek, S. B. Clark, P. T. Dickman, B. L. Hamrick, R. T. Jubin, W. Lee, A. Navrotsky, J.A. Rispoli, R. A. Robbins, R. D. Rogers, P. D. Spanos, *The National Academies Press*, Washington D.C., 120 pp. (2019).

PAPERS BY COLLEAGUES BASED ON RESEARCH CONDUCTED WHILE ASSOCIATED WITH A. NAVROTSKY'S GROUP:

"Infrared and Raman Studies of Chemically Vapor Deposited Amorphous Silica," M. Huffman and P. McMillan, *J. Non-Cryst. Solids*, 76, 369-379 (1985).

"The Structure of La₂NiO_{4.18}," A. Mehta and P. J. Heaney, *Phys. Rev. B*, 49, 563-571 (1994).

"The Fate of Olivine in Subducting Slabs: A Reconnaissance Study," P. Burnley, *Amer. Miner.*, 80, 1293-1301 (1995).

"Structural Aspects of the Ferroelectric Phase Transition in La-Substituted Lead Titanate," G. A. Rossetti, Jr., L. E. Cross, and J. P. Cline, *J. Mater. Sci.*, 30, 24-34 (1995).

"Cation Clustering and Formation of Free Oxide Ions in Sodium and Potassium Lanthanum Silicate Glasses: Nuclear Magnetic Resonance and Raman Spectroscopic Findings," T. Schaller, J. F. Stebbins, and M. S. Wilding, *J. Non-Cryst. Solids*, 243, 146-157 (1999).

"Cooling Rates of Hyaloclastites: Applications of Relaxation Geospeedometry to Undersea Volcanic Deposits," M. Wilding, D. Dingwell, R. Batiza, and L. Wilson, *Bull. Volcanol.*, 61, 527-536 (2000).

"Multidisciplinary Contributions from Crystal Chemical and Geochemical Studies: The 2002 Benjamin Franklin Medal in Earth Science Presented to Alexandra Navrotsky," G. Ulmer, *Journal of the Franklin Institute*, 340, 269-282 (2003).

"Report of Investigation, Reference Material 8850, Zeolite Y," S. Turner and R. R. Cavanagh, *National Institute of Standards & Technology* (2006).

"Report of Investigation, Reference Material 8851, Zeolite A," S. Turner and R. R. Cavanagh, *National Institute of Standards & Technology* (2006).

“Report of Investigation, Reference Material 8852, Ammonium ZSM-5 Zeolite,” S. Turner and R. R. Cavanagh, *National Institute of Standards & Technology* (2006).

“Hot Stuff: Measuring Thermophysical Properties at Very High Temperatures,” E. De Guire, Ed., *The American Ceramic Society* (online) <http://ceramics.org/ceramic-tech-today/hot-stuff-measuring-thermophysical-properties-at-very-high-temperatures> (April 17, 2012).

“Thermodynamic Approach Provides Insights into the Aging Process of Biological Apatite” J. D. Pasteris, *American Mineralogist*, 99, 562-563 (2014).

“Energetics of the Adsorption of Ethanol on Calcite Nanoparticles,” H. Zeiger, *Phys.org*, <http://phys.org/news/2015-04-energetics-adsorption-ethanol-calcite-nanoparticles.html> (April 21, 2015).

“Newly formed consortium uses interdisciplinary membership, industry dialogue to advocate thermodynamic data,” A. Gocha, *The American Ceramic Society* (online), <http://ceramics.org/ceramic-tech-today/newly-formed-consortium-uses-interdisciplinary-membership-industry-dialogue-to-advocate-thermodynamic-data> (March 6, 2018).

“Turning carbon dioxide into fuel: Improved nanocatalyst stability boosts artificial photosynthesis efficiency,” L. McDonald, *Ceramic Tech Today* (online), <https://ceramics.org/ceramic-tech-today/energy-1/turning-carbon-dioxide-into-fuel-improved-nanocatalyst-stability-boosts-artificial-photosynthesis-efficiency> February 26, 2019.

PAPERS BY OTHERS:

“Scorching Intellect,” I. Hsiao, *The Chemists Club*, University of Chicago, Winter 2019.

“New Navrotsky award recognizes innovation in solid-state thermodynamic research,” E. De Guire, *Am. Ceram. Soc. Bull.*, 97 (8) 17 (2018).