GUY L. HOVIS

John H. Markle Professor Emeritus of Geology
Lafayette College

CONTACT INFORMATION

Address: Department of Geology & Environmental Geosciences
Lafayette College
Easton, PA 18042

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EDUCATION

Harvard University, Ph.D. (1971) and M.A. (1967), Geology

The Johns Hopkins University (1964-65), Geology

Franklin and Marshall College, A.B. (1964), Geology

PROFESSIONAL POSITIONS

Lafayette College
- John H. Markle Professor Emeritus of Geology, 2015-
- John H. Markle Professor of Geology, 1991-2014
- Professor of Geology, 1984-2014
- Associate Professor of Geology, 1978-84
- Assistant Professor of Geology, 1974-78

U.S. National Science Foundation
- Program Director, Petrology and Geochemistry Program, 1990-92

Salem State College (Massachusetts)
- Assistant Professor of Earth Sciences, 1972-74

Harvard University
- Research Fellow, 1971-72

PROFESSIONAL AFFILIATIONS, PAST AND PRESENT

American Association for the Advancement of Science
American Association of University Professors
American Geophysical Union (Life Member)
Calorimetry Conference
Council on Undergraduate Research
Geological Society of America
Geological Society of Washington
Mineralogical Society of America (Life Member and Fellow)
The Mineralogical Society (UK)
Society of Sigma Xi

RESEARCH INTERESTS

Thermodynamics of minerals, liquids (glasses), and mineralogical processes

Hydrofluoric acid solution calorimetry

Thermal expansion behavior of minerals

Phase equilibria

RESEARCH GRANTS

Continuous grants 1976 to 2018 totaling $1.6 million from the U.S. National Science Foundation for support of solution calorimetric and thermal expansion research

SUPERVISION OF LAFAYETTE COLLEGE STUDENTS: EXCEL, INDEPENDENT STUDY, AND THESIS RESEARCH

PRIOR TO 1995

Lisa Goetz, Senior Thesis

Hendrick van Oss, Senior Thesis

Susan Bathke, Senior Thesis

April Clare, Senior Thesis

Eric Peckins, Summer research

Douglas Bulfinch, Summer research

Jason Kelsey, Summer Research

David Albala, Independent Study

Barry Starkman, Independent Study

Vicki Crouse, Independent Study

Andrea Dennison, Independent Study

Margaret Roll (Bose), Summer research

SINCE 1995 *(reverse chronological order)*

Nicole Maksymiw '18, EXCEL (summer 2016), Thermal expansion of pyroxenes, one garnet, one amphibole

Kevin Jackson '16, EXCEL (2015-16), Literature search on thermal expansion of select silicates

Christine Almer '16, EXCEL (2015-16), Thermal expansion of pyroxenes and amphiboles

Christine Almer '16, EXCEL (summer 2014), Thermal expansion of garnets, olivines, amphiboles

Amanda Leaman '15, EXCEL (summer 2014), Thermal expansion of garnets, olivines, amphiboles

Caitlin Altomare '14, Senior Thesis (2013-14), Thermal expansion of tourmaline group

Matthew Morris '15, EXCEL (summer 2013), Thermal expansion of pyroxenes, tourmaline, apatite

Amanda Leaman '15, EXCEL (summer 2013), Thermal expansion of pyroxenes, olivine, apatite

(continued)

Derek Morris '13, Senior Thesis / Independent Study (2012-13), Thermal expansion of pyroxenes

Caitlin Altomare ’14, EXCEL (fall 2011), Thermal expansion of tourmaline and apatite

Brian Scott ’12, EXCEL (fall 2011), Thermal expansion of tourmaline and apatite

Gary Tomaino '14, Summer 2011, Tourmaline high-temperature X-ray measurements

Caitlin Altomare ’14, EXCEL (summer 2011), Thermal expansion of OH-F and Cl-F apatite

Brian Scott ’12, EXCEL (summer 2011), Thermal expansion of OH-F and Cl-F apatite

Anthony Romanoski ’10, Independent Study (fall 2009), Thermal expansion of feldspars

Allison Tether ‘10, Independent Study (fall 2009), Thermal expansion of feldspars

Aaron Medford ’11, EXCEL (summer 2009), Thermal expansion of feldspars, research performed in part at Cambridge University

Maricate Conlon ’11, EXCEL (summer 2009), Thermal expansion of feldspars, research performed in part at Cambridge University

William Hudacek ’10, EXCEL (fall 2009), Thermal expansion of Cl-F apatite

Sarah Wildermuth ’09, Summer research (2008), Thermal expansion of Cl-F apatite

Andrew Mott '07, Senior Thesis, Investigation of fluorite geochemistry

Andrew Mott '07, The nepheline-kalsilite solvus for intermediate excess silica contents

Joanna Morabito '08 (summer 2006) Thermal expansion of nepheline - kalsilite crystalline solutions having intermediate excess Si, research performed in part at Cambridge University

Andrew Mott '07 (summer 2006) Thermal expansion of Li, H, and NH_4 feldspar, research performed in part at Cambridge University

Andrew Mott '07, The nepheline-kalsilite solvus for intermediate excess silica contents

Erik Person '06, Senior Thesis, Investigation of volcanic rocks from the Rio Grande Rift

Amy Spooner '06, Thermal expansion of Si-rich feldspathoids, ammonium feldspar, and Rb feldspar, research performed in part at Cambridge University

Erik Person '06, Thermal expansion of Si-rich, feldspathoids, ammonium feldspar, and Rb feldspar, research performed in part at Cambridge University

Erik Person '06, Synthesis of ordered K-Rb feldspars

Erik Person '06, Senior thesis, Petrogenesis of recent volcanic rocks from the Rio Grande Rift

Erik Person '06, Relationships of thermodynamic data to the thermal expansion of minerals

Becky Dreibelbis '02, Thermal expansion of feldspathoids, research performed in part at Cambridge University

Robert Libutti '02, Synthesis of disordered K-Rb feldspars

David Wattles '00, Thermal expansion of feldspathoids, research performed in part at Cambridge University

(continued)

David Wattles '00, Synthesis of disordered K-Rb feldspars

Meghan Keohane '98, Thermal expansion of alkali feldspars, research performed in part at Cambridge University

James A. Crelling '97, Thermal expansion of alkali feldspars and feldspathoids, research performed in part at Cambridge University

James A. Crelling '97, Senior Thesis, Effect of excess Si on the nepheline-kalsilite solvus

Shannon Brennan '95, Senior Thesis, Thermal expansion of disordered alkali feldspars, research performed in part at Cambridge University

Shannon Brennan '95, Summer research (1994), Thermal expansion of disordered alkali feldspars, research performed in part at Cambridge University

SELECTED HONORS *(reverse chronological order)*

Member of a national Committee of Visitors to evaluate U.S. National Science Foundation's Earth Sciences Division, 2017

Member of a national Committee of Visitors to evaluate U.S. National Science Foundation's Earth Sciences Instrumentation and Facilities Program, 2013

Elected Councilor, Mineralogical Society of America, 2010-13

Visiting Professor, Institute de Physique du Globe de Paris, Paris, France, fall, 2003

Awardee of the Mary Louise Van Artsdalen Prize for outstanding scholarly achievement, Lafayette College, 1998

Awarded Life Membership, Clare Hall, Cambridge University, England, 1998

Visiting Fellow, Clare Hall, Cambridge University, England, January - June, 1998

Thirty-second Inductee, William Penn Senior High School Hall of Fame, York, PA, 1995

Named Life Fellow, Mineralogical Society of America, 1991

Named John H. Markle Professor of Geology, Lafayette College, 1991 (Inaugural lecture: "Scientific Research and Science Policy in America: Two Different Worlds," 1993)

Invitation from the National Academy of Sciences of the Soviet Union to address symposium on "Thermodynamics in Geology" relative to research on the thermodynamic properties of minerals, Suzdal, USSR, 1985

Recipient of Thomas Roy and Lura Forrest Jones Award for superior teaching and contributions to one's discipline, Lafayette College, 1981

Recipient of Jones Faculty Lectureship, Lafayette College, 1979 (Lecture title: "Crystals: Geothermometers, Geobarometers, and Storehouses of Earth History")

Finalist among faculty in science and engineering for Student Government "Superior Teaching" Award, Lafayette College, several years

Lafayette College Summer Research Fellow, 1975

Harvard University Postdoctoral Research Fellow, 1971-72

National Science Foundation Graduate Fellow, 1964-67

PRIMARY COURSES TAUGHT AT LAFAYETTE COLLEGE PRIOR TO RETIREMENT

From Fire to Ice: An Introduction to Geology

Earth and Planetary Materials (Mineralogy)

Optical and X-ray Analysis of Minerals

Igneous and Metamorphic Petrology

Geochemistry

Independent Study

Thesis

SELECTED SERVICE AND ADMINISTRATIVE ACTIVITIES

Director and Principal Scientist, Solution Calorimetry Laboratory, Lafayette College, 1976-2016

Department of Geology, Lafayette College

Department Head, 1997-2000

Acting Department Head: Academic year 1993-94; spring term 1981-82; fall term 1982-83

Brown-bag Seminar Coordinator, multiple years

Faculty and Other Lafayette College Committees

Present member of Faculty Retirement Committee (2016-2019)

Member & officer of numerous other committees, Lafayette College, 1974-2014

Contributor to study of the Lafayette College tenure system and co-author (with Provost Blanshei) of final report from the All-College Tenure Committee, 1985-86

U.S. National Science Foundation

Member of a national Committee of Visitors to evaluate U.S. National Science Foundation's Earth Sciences Division, 2017

Member of a national Committee of Visitors to evaluate U.S. National Science Foundation's Earth Sciences Instrumentation and Facilities Program, 2013

Program Director, Petrology and Geochemistry Program, Earth Sciences Division, 1990-92

Mineralogical Society of America

Councillor, 2010-2013

Lecture Program Administrator, 1995-1999

PUBLICATIONS: LISTED BELOW

PUBLICATIONS OF GUY L. HOVIS

(reverse chronological order)

DOCTORAL DISSERTATION

Hovis, G.L. (1971) *Thermodynamic properties of monoclinic potassium feldspars*. Harvard University, Cambridge, Massachusetts.

ARTICLES *(all peer-reviewed)*

Hovis, G.L. (2017) A refined view of the thermodynamic mixing quantities for alkali feldspars and the quandary of excess configurational entropy. *American Journal of Science* 317, 597-640.

Hovis, G., Abraham, T., Hudacek, W., Wildermuth, S., Scott, B., Altomare, C., Medford, A., Conlon, M., Morris, M., Leaman, A., Almer, C., Tomaino, G., Harlov, D. (2015) Thermal expansion of F-Cl apatite crystalline solutions. *American Mineralogist* 100, 1040-1046.

Hovis, G.L., Scott, B.T., Altomare, C.M., Leaman, A.R., Morris, M.D., Tomaino, G.P. (2014) Thermal expansion of fluorapatite-hydroxylapatite crystalline solutions. *American Mineralogist* 99, 2171-2175.

Hovis, G.L., McCubbin, F., Nekvasil, H., Ustunisik, G., Woerner, W., Lindsley, D.H. (2014) A novel technique for fluorapatite synthesis and the thermodynamic mixing behavior of F-OH apatite crystalline solutions. *American Mineralogist* 99, 890-897.

Hovis, G.L., Medford, A., Conlon, M., Tether, A., Romanoski, A. (2010) Principles of thermal expansion in the feldspar system. *American Mineralogist* 95, 1060-1068.

Hovis, G.L., Harlov, D. (2010) Solution calorimetric investigation of fluor-chlorapatite crystalline solutions. *American Mineralogist* 95, 946-952.

Hovis, G.L., Mott, A. V., Roux, J. (2009) Thermodynamic, phase equilibrium, and crystal chemical behavior in the nepheline - kalsilite system. *American Journal of Science* 309, 397-419.

Hovis, G.L., Morabito, J.R. Spooner, R., Mott, A. Person, E.L., Henderson, C.M.B., Roux, J., Harlov, D. (2008) A simple predictive model for the thermal expansion of $AlSi_3$ feldspars. *American Mineralogist* 93, 1568-1573.

Hovis, G.L., Roux, J. (2008) Thermodynamic mixing properties of Rb-K feldspars. *American Mineralogist* 93, 1597-1602.

Hovis, G.L., Person, E., Spooner, A., Roux, J. (2006) Thermal expansion of highly silicic nepheline - kalsilite crystalline solutions. *Mineralogical Magazine* 70, 383-396.

Richet, P., Hovis, G.L., Whittington, A. (2006) Water and magmas: Calorimetric effects of outgassing. *Earth and Planetary Science Letters* 241, 972-977.

Hovis, G.L., Harlov, D., Gottschalk, M. (2004) Solution calorimetric determination of the enthalpies of formation of NH_4-bearing minerals buddingtonite and tobelite. *American Mineralogist* 89, 85-93.

Hovis, G.L., Harlov, D., Gottschalk, M. (2004) Erratum: Solution calorimetric determination of the enthalpies of formation of NH_4-bearing minerals buddingtonite and tobelite. *American Mineralogist* 89, 1838-1839.

Neuhoff, P. S., Hovis, G.L., Balassone, G., Stebbins, J.F. (2004) Thermodynamic properties of analcime solid solutions. *American Journal of Science* 304, 21-66.

Richet, P., Hovis, G.L., Poe, B. (2004) Energetics of pressure-induced densification in GeO_2 glass. *Chemical Geology* 213, 41-47.

Hovis, G.L., Toplis, M.J., Richet, P. (2004) Thermodynamic mixing properties of sodium silicate liquids and implications for liquid-liquid immiscibility. *Chemical Geology* 213, 173-186.

Richet, P., Hovis, G.L., Whittington, A., Roux, J. (2004) Energetics of water dissolution in trachyte glasses and liquids. *Geochimica et Cosmochimica Acta* 68, 5151-5158.

Hovis, G.L., Kroll, H., Breit, U., Yund, R.A. (2003) Elastic strain enthalpies of exsolution: HF solution calorimetric experiments on alkali aluminosilicate and aluminogermanate feldspars. *American Mineralogist* 88, 547-555.

Hovis, G.L., Crelling, J., Wattles, D., Dreibelbis, B., Dennison, A., Keohane, M., Brennan, S. (2003) Thermal expansion of nepheline – kalsilite crystalline solutions. *Mineralogical Magazine* 67, 535-546.

Hovis, G.L., Roux, J., Rodrigues, E. (2002) Thermodynamic and structural behavior of analcime - leucite analogue systems. *American Mineralogist* 87, 523-532.

Hovis, G.L., Crelling, J.A. (2000) The effects of excess silicon on immiscibility in the nepheline-kalsilite system. *American Journal of Science* 300, 238-249.

Hovis, G.L., Roux, J. (1999) Thermodynamics of excess silicon in nepheline and kalsilite crystalline solutions. *European Journal of Mineralogy* 11, 815-827.

Hovis, G.L., Brennan, S., Keohane, M., Crelling, J. (1999) High-temperature X-ray investigation of sanidine - analbite crystalline solutions: Thermal expansion, phase transitions, and volumes of mixing. *The Canadian Mineralogist* 37, 701-709.

Hovis, G.L., Roux, J., Richet, P. (1998) A new era in hydrofluoric acid solution calorimetry: Reduction of required sample size below ten milligrams. *American Mineralogist* 83, 931-934.

Hovis, G.L. (1997) Hydrofluoric acid solution calorimetric investigation of the effect of anorthite component on enthalpies of K-Na mixing in feldspars. *American Mineralogist* 82, 149-157.

Hovis, G.L., Graeme-Barber, A. (1997) Volumes of K-Na mixing for low albite - microcline crystalline solutions at elevated temperature: A test of regular solution thermodynamic models. *American Mineralogist* 82, 158-164.

Hovis, G.L. (1997) Phase fun with feldspars: Simple experiments to change the chemical composition, state of order, and crystal system. In *Teaching Mineralogy*, J. B. Brady, D. W. Mogk, and D. Perkins, eds., Mineralogical Society of America, Washington, D.C., 97-106.

Hovis, G.L. (1997) Determination of chemical composition, state of order, molar volume, and density of a monoclinic alkali feldspar using X-ray diffraction. In *Teaching Mineralogy*, J. B. Brady, D. W. Mogk, and D. Perkins, eds., Mineralogical Society of America, Washington, D.C., 107-118.

Roux, J., Hovis, G.L. (1996) Thermodynamic mixing models for muscovite - paragonite solutions based on solution calorimetric and phase equilibrium data. *Journal of Petrology* 37, 1241-1254.

Hovis, G.L., Navrotsky, A. (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. *American Mineralogist* 80, 280-284.

Hovis, G.L., Roux J. (1993) Thermodynamic mixing properties of nepheline - kalsilite crystalline solutions. *American Journal of Science* 293, 1108-1127.

Hovis, G.L., Spearing, D.R., Stebbins, J., Roux, J., Clare, A. (1992) X-ray powder diffraction and ^{23}Na, ^{27}Al, and ^{29}Si MAS-NMR investigation of nepheline - kalsilite crystalline solutions. *American Mineralogist* 77, 19-29.

Hovis, G.L., Delbove, F., Roll, M. (1991) Gibbs energies and entropies of K-Na mixing for alkali feldspars from phase equilibrium data: Implications for feldspar solvi and short-range order. *American Mineralogist* 76, 913-927.

Hovis, G.L. (1989) Effect of Al-Si distribution on the X-ray powder diffraction maxima of alkali feldspars and an easy method to determine T1 and T2 site occupancies. *The Canadian Mineralogist* 27, 107-118.

Hovis, G.L. (1988) Enthalpies and volumes related to K-Na mixing and Al-Si order/disorder in alkali feldspars. *Journal of Petrology* 29, 731-763.

Phillips, B.L., Kirkpatrick, R.J., Hovis, G.L. (1988) ^{27}Al, ^{29}Si, and ^{23}Na MAS NMR study of an Al,Si ordered alkali feldspar solid solution series. *Physics and Chemistry of Minerals* 16, 262-275.

Hovis, G.L. (1986) Behavior of alkali feldspars: Crystallographic properties and characterization of composition and Al-Si distribution. *American Mineralogist* 71, 869-890.

Hovis, G.L. (1984) A hydrofluoric acid solution calorimetric investigation of glasses in the systems $NaAlSi_3O_8$-$KAlSi_3O_8$ and $NaAlSi_3O_8$-Si_4O_8. *Geochimica et Cosmochimica Acta* 48, 523-525.

Smith, J.V., Blackwell, C.S., Hovis, G.L. (1984) NMR of albite-microcline series. *Nature* 309, 140-142.

Haselton, H.T. Jr., Hovis, G.L., Hemingway, B.S., Robie, R.A. (1983) Calorimetric investigation of the excess entropy of mixing in analbite - sanidine solutions: Implications for Na,K short-range order and two-feldspar thermometry. *American Mineralogist* 68, 398-413.

Hovis, G.L. (1982) Resolution of a systematic interlaboratory discrepancy in recent calorimetric data, and the heats of solution of quartz, low albite, adularia, and gibbsite. *American Mineralogist* 67, 950-955.

Hovis, G.L. (1980) Angular relations of alkali feldspar series and the triclinic-monoclinic displacive transformation. *American Mineralogist* 65, 770-778.

Thompson, J.B., Jr., Hovis, G.L. (1979) Entropy of mixing in sanidine. *American Mineralogist* 64, 57-65.

Hovis, G.L. (1979) A solution calorimetric investigation of K-Na mixing in a sanidine - analbite ion-exchange series: Corrections. *American Mineralogist* 64, 925.

Thompson, J.B. Jr., Hovis, G.L. (1979) Structural-thermodynamic relations of the alkali feldspars. *Transactions of the American Crystallographic Association* 15, 1-26.

Hovis, G.L., Peckins, E. (1978) A new x-ray investigation of maximum microcline crystalline solutions. *Contributions to Mineralogy and Petrology* 66, 345-349.

Thompson, J.B. Jr., Hovis, G.L. (1978) Triclinic feldspars: Angular relations and the representation of feldspar series. *American Mineralogist* 63, 981-990.

Hovis, G.L., Waldbaum, D.R. (1977) A solution calorimetric investigation of K-Na mixing in a sanidine - analbite ion-exchange series. *American Mineralogist* 62, 680-686.

Hovis, G.L. (1977) Unit-cell dimensions and molar volumes for a sanidine - analbite ion-exchange series. *American Mineralogist* 62, 672-679.

Thompson, J.B. Jr., Waldbaum, D.R., Hovis, G.L. (1974) Thermodynamic properties related to ordering in end-member alkali feldspars. In *The Feldspars*, W. S. MacKenzie and J. Zussman, eds., University of Manchester Press, Manchester, England, 218-248.

Hovis, G.L. (1974) A solution calorimetric and X-ray investigation of Al-Si distribution in monoclinic potassium feldspars. In *The Feldspars*, W. S. MacKenzie and J. Zussman, eds., University of Manchester Press, Manchester, England, 114-144.

(publications continued below)

ABSTRACTS AND CONFERENCE PRESENTATIONS

Hovis, G.L. (2016) Systematic behavior of K-Na mixing enthalpies with Al-Si order in alkali feldspars and implications for phase equilibria. *Abstracts for the 2nd European Mineralogical Conference, emc2016, Rimini, Italy.*

Hovis, G., Abraham, T., Hudacek, W. Wildermuth, S., Scott, B., Altomare, C., Medford, A. Conlon, M., Morris, M., Leaman, A., Almer, C., Tomaino, G., and Harlov, D. (2015) Thermal expansion of fluorapatite-chlorapatite solid solutions. *Abstracts of the 2015 European Geosciences Union General Assembly, abstract EGU2015-1835.*

Hovis, G.L., (2015) Well-constrained enthalpies od K-Na mixing in Al-Si ordered and disordered alkali feldspar series from HF solution calorimetric measurements on forty-one samples. *Abstracts of the Geological Society of America annual meeting, submission 257589.*

Altomare, C.M., Hovis, G.L. (2014) Thermal expansion in the tourmaline mineral system. *Abstracts of the Northeast Section Meeting of the Geological Society of America, Abstract No. 236142.*

Hovis, G.L. (2013) Analbite – sanidine thermodynamic mixing properties: Highly precise HF solution calorimetric data across a twenty-member crystalline solution series. *American Geophysical Union annual meeting, Abstract No. 1803700.*

Hovis, G.L., Leaman, A.R., Morris, M.D., Morris, D.K. (2013) Thermal expansion systematics for the pyroxene system. *Abstracts of the Geological Society of America annual meeting, Paper No. 373-6.*

Hovis, G.L. (2013) Newly measured enthalpies of K-Na mixing for low albite - microcline crystalline solutions. *2013 Goldschmidt Conference abstract,* Mineralogical Magazine *77(5), 1327.*

Hovis, G.L. (2012) A tribute to James B. Thompson, Jr.: Highly precise enthalpies of K-Na mixing for low albite – microcline crystalline solutions. *Geological Society of America Annual Meeting Abstracts, Paper No. 205820.*

Hovis, G., Scott, B., Altomare, C., Tomaino, G. (2012) Thermal expansion investigation of tourmaline-group minerals. *Geophysical Research Abstracts 14, Abstract EGU2012-9294-2. [2012 European Geosciences Union General Assembly]*

Hovis, G.L. (2011) Thermodynamic mixing behavior of F-OH apatite crystalline solutions. *Transactions of the American Geophysical Union Meeting, abstract V13G-07.*

Hovis, G.L. (2011) A novel technique for F/OH apatite series synthesis and early results on thermodynamic mixing properties of fluor-hydroxlyapatite solid solutions. *2011 Goldschmidt Conference Abstracts, section H, 89.*

Hovis, G., Harlov, D., Gottschalk, M., Schettler, G. (2011) Unit-cell data and XRD compositional indicators for fluorapatite-chlorapatite crystalline solutions. *Geophysical Research Abstracts 13, Abstract EGU2011-12014. [2011 European Geosciences Union General Assembly]*

Hovis, G.L. (2010) Connections among experimentally determined phase equilibria, the thermodynamic properties of minerals, and Newtonian behavior. *Geological Society of America Annual Meeting Abstracts, Paper No. 135-9.*

Hovis, G., Medford, A., Conlon, M., Romanoski, A., Tether, A. (2010) Principles of feldspar Thermal Expansion. *Acta Mineralogica-Petrographica Abstract Series, Volume 6, p. 708. [International Mineralogical Association Meeting 2010]*

Hovis, G.L., (2010) Enthalpies and entropies of mixing in alkali-bearing aluminosilicate mineral and glass solutions. *Acta Mineralogica-Petrographica Abstract Series, Volume 6, p. 808. [International Mineralogical Association Meeting 2010]*

Hovis, G. (2010) Thermodynamic and phase behavior of alkali-bearing framework silicates. *2010 Goldschmidt Conference Abstracts, 54.*

Hovis, G., Medford, A., Conlon, M., Tether, A., Romanoski, A. (2010) Principles of thermal expansion in feldspars. *Geophysical Research Abstracts 12, Abstract EGU2010-13187-5. [2010 European Geosciences Union General Assembly]*

Hovis, G.L., Medford, A., Conlon, M. (2009) The thermal expansion of feldspars. *Transactions of the American Geophysical Union Meeting, abstract MR31B-1651.*

Hovis, G., Harlov, D., Gottschalk, M., Hudacek, W., Wildermuth, S. (2009) Thermal expansion behavior of fluor-chlorapatite crystalline solutions. *Geophysical Research Abstracts 11, Abstract EGU2009-5150-3. [2009 European Geosciences Union General Assembly]*

Whitaker, S., Reaman, D., Kabbes, J. E., Hovis, G.L., Campbell, A.J., Cottrell, E., Panero, W.R. (2008) Could K and Rb be in Earth's core? *Transactions of the American Geophysical Union 89 (53), abstract D-143A-1768.*

Hovis, G.L., Mott, A.V. '07, Roux, J. (2008) The substantial effect of mineral structure on phase equilibria and thermodynamic behavior in the nepheline - kalsilite system. *Geological Society Of America Annual Meeting Abstracts With Programs 40, No. 6, p. 515.*

Hovis, G.L., Roux, J. Mott, A.V. '07 (2008) The significant effect of alkali-site occupancy on phase equilibria and thermodynamic behavior of nepheline - kalsilite crystalline solutions. *2008 Goldschmidt Conference Abstracts 2008, p. A395.*

Hovis, G.L., Mott, A.V. '07, Roux, J. (2008) Solvus reversals and related thermodynamic mixing properties of nepheline-kalsilite crystalline solutions having elevated excess silicon. *Geophysical Research Abstracts 10, Abstract A-01429. [2008 European Geosciences Union General Assembly]*

Ruhl, Laura S., Neuhoff, Philip S., Hovis, Guy L. (2007) Thermodynamics of borax - tincalconite equilibrium. *Geological Society of America Annual Meeting Abstracts with Programs 39, No. 6, 465.*

Hovis, G.L., Roux, J. (2007) Investigations of the thermodynamic and thermal expansion behavior of feldspars and feldspathoids. *Conference on Frontiers in Mineral Sciences 2007, Cambridge University, UK, Programme and Abstracts, 102.*

Hovis, G.L., Harlov, D., Hahn, A. (2007) thermodynamic mixing properties of fluorapatite - chlorapatite crystalline solutions. *Conference on Frontiers in Mineral Sciences 2007, Cambridge University, UK, Programme and Abstracts, 249.*

Morabito, J., Hovis, G. (2007) Thermal expansion of nepheline-kalsilite minerals having intermediate vacancy and excess silicon content. *NCUR, 2007 Abstracts, 21st National Conference on Undergraduate Research, April 12-14, 2007, Dominican University of California.*

Hovis, G.L., Harlov, D.E., Hahn, A., Steigert, H. (2007) Enthalpies and volumes of F-Cl mixing in fluorapatite - chlorapatite crystalline solutions. *Geophysical Research Abstracts 9, abstract 01748. [European Geosciences Union General Assembly]*

Hovis, G.L., Morabito, J., Mott, A. (2006) Thermodynamic Mixing Properties of Rb-K-Na Feldspars and Relevance to Rb-, NH_4-, K-, Na-, and Li-Feldspar Thermal Expansion. *Transactions of the American Geophysical Union 87, abstract number MR43B-1073.*

Hovis, G., Wattles, D., Roux, J., Person, E. (2006) Thermodynamic mixing properties of rubicline - microcline crystalline solutions. *Geophysical Research Abstracts 8, abstract number 09391. [2006 European Geosciences Union General Assembly]*

Hovis, G.L., Neuhoff, P.S. (2006) Thermodynamic properties of natrolite. Zeolite '06 - 7th International Conference on the Occurrence, Properties, and Utilization of Natural Zeolites. *Book of Abstracts, R. S. Bowman and S. E. Delap, eds., 134-135.*

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