

Curriculum Vita

Jibamitra Ganguly, Professor Emeritus
Department of Geosciences
University of Arizona, Tucson

Education

Ph.D., University of Chicago, U.S.A., 1967

Thesis: Reconnaissance Study of the Stabilities of Chloritoid and Staurolite, and Some Equilibria in the System FeO-Al₂O₃-SiO₂-H₂O-O₂.

Professional Appointments

- 1972-1975: Research Geophysicist, Institute of Geophysics and Planetary Physics, University of California, Los Angeles, U.S.A.
- 1971: Assistant Professor, Department of Chemistry, Birla Institute of Technology and Science, India
- 1969-1970: Officer, Scientists' Pool (Government of India) at the Geology Department, Jadavpur University, India
- 1967-1969: Post-Doctoral Research Staff, Department of Geology and Geophysics, Yale University, U.S.A.
- 1961-1962: Scientific Officer, Metallurgy Division, Atomic Energy Establishment, Government of India.
- 1975 – Present: Assistant Professor, Associate Professor, Full Professor (1986 -2016), Department of Geosciences, University of Arizona

Major Fields

Geosciences and Planetary Sciences (Petrology, Geo-/Cosmo-chemistry, Petrological Geodynamics, Asteroids)

Keynote/Plenary Speaker

- Annual Meeting, Italian Mineralogical Society, Padova, Italy, 1989
- Third International Conference on Experimental Petrology, Mineralogy and Geochemistry, Edinburgh, U.K., 1990
- 63rd International Conference of the Meteoritical Society, Johannesburg, 1999
- International Mineralogical Association, Edinburgh, 2002
- Calphad XXXII (International conference on computational thermochemistry), Quebec,

2003

- Goldschmidt Conference (International conference on Geochemistry), Kurashiki, Japan, 2003

Invited Speaker (Symposia, Workshop and Short Courses), 1990 --

- International Symposium on Thermochemistry, University of Uppsala, Sweden, 1990 (sponsor: Swedish Research Council)
- Symposium on Thermodynamic Mixing Properties of Petrologically Important Minerals, Geological Society of America, 1990
- Symposium on Crystal Chemistry, European Union of Geology, 1991
- Summer School on 'Pressure and Temperature Evolution of Orogenic Belts', Italian Council for Research (CNR) and The University of Siena, 1991 (sponsor: Italian Research Council)
- Summer School on 'Radiometric Age Determinations in Orogenic Processes - Potentials and Limits': Italian Council for Research (CNR), 1992 (sponsor: Italian Research Council)
- Summer School on Geochemical Modeling: Italian Research Council and the University of Genova
- Italian Research Council Symposium on Thermodynamics and Crystal Chemistry of Garnets, 1993 (sponsor: Italian Research Council)
- International Mineralogical Association, 1994 (Pisa, Italy): Symposia on (1) Diffusion in Minerals and Rocks (2) Cooling Rates of Terrestrial and Extraterrestrial Rocks and (3) Mineral Chemistry and Geothermobarometry
- International Geological Congress, 1996 (Beijing, China): Symposium on Petrologic geothermometry and Geobarometry
- International Geological Congress, 1996 (Beijing, China), Short course on 'Diffusion Kinetics in Minerals'
- Symposium in the honor of Julian Goldsmith and Robert C. Newton, University of Chicago, 1998 GSA Symposium on Experimental Petrology, 1998
- European Mineralogical Union: Short course on "Solid solutions in silicate and oxide systems of geological importance", Luebeck, Germany, 2001
- European Mineralogical Union: Short course on "Energy Modeling of Minerals", Budapest, Hungary 2002
- Goldschmidt Conference (Geochemical Societies of USA & Europe), 2002
- Workshop on Experimentation and Modeling in Cosmochemistry, 72 nd Annual Meeting of the Meteoritical Society, Nancy, France, 2009

- Mineralogical Society of America Short Course on “Diffusion in Minerals and Melt”, 2009
- ThermoDynamixIII Workshop, Dublin, 2011
- NSF workshop on “Geomaterials Genome Project”, Miami, 2013

Visiting/Guest Professor/Honorary Professor

- University of Padova and National Research Council (CNR), Italy (Fall, 1992)
- University of Uppsala , Sweden, 1998
- Bayresches Geoinstitut, University of Bayreuth, Germany, 2002
- Indian Institute of Science, Education and Research (Honorary Professor), 2011 --

Special Invitations

- Invited Scientist: Council of Scientific and Industrial Research, Govt of India, under the sponsorship of United Nations program TOKTEN (Transfer of know-how through expatriate Nationals).
- Chinese Academy of Sciences, 2000

Academic Honors

Alexander von Humboldt Research Prize (forschungspreis), Germany, 2002

Fellow, American Geophysical Union

Fellow, Mineralogical Society of America

Research & Publications

Through a long career, my research has covered a wide range of topics in Earth and Planetary Sciences, as reflected by publications in a large spectrum of international journals in **Petrology, Mineralogy, Mineral Physics, Geophysics, Geochemistry, Planetary Sciences and Materials Sciences**. The major research topics and selected publications under each (but excluding books) are as follows. This is followed by a chronological list of all publications.

(Google scholar citation link: http://scholar.google.com/citations?user=R_VTQUYAAAAJ)

Research Topics and Selected Publications

A. Phase Equilibria, Thermodynamics, and Geothermo-barometry (1967-2006)

Ganguly, J. (1969) Chloritoid stability and related parageneses: Theory, experiments, and applications: American Journal of Science, 267, 910-944

Ganguly, J. (1972) Staurolite stability and related parageneses: Theory, experiments, and applications. Journal of Petrology, 13, 335-365.

Ganguly, J. and S.K. Saxena (1984) Mixing properties of aluminosilicate garnet solid solution: Constraints from natural and experimental data, and applications to geothermo-

barometry: *Amer. Mineralogist*, 69, 88-97.

- Lee, H.Y., and Ganguly, J. (1988) Equilibrium compositions of coexisting garnet and orthopyroxene: Reversed experimental determinations in the system FeO-MgO-Al₂O₃-SiO₂, and applications: *Journal of Petrology*, 29, 93-113.
- Cheng, W. and Ganguly, J. (1994) Some aspects of multicomponent excess free energy models with subregular binaries, *Geochimica et Cosmochimica Acta*, 58, 3763-3767.
- Bose, K., and Ganguly, J. (1995) Quartz-coesite transition revisited: reversed experimental determination at 500-1200 °C and retrieved thermochemical parameters. *American Mineralogist* 80, 231-238.
- Ganguly, J., Cheng, W. and Tirone, M. (1996) Thermodynamics of aluminosilicate garnet solid solution: new experimental data, an optimized model, and thermometric applications. *Contrib. Mineral. Petrol.*, 126, 137-151.
- Bose, K. and Ganguly, J. (1995) Experimental and theoretical studies of the stabilities of talc, antigorite and phase A at high pressures with applications to subduction processes. *Earth & Planetary Science Letters*, 136, 109-122.
- Ganguly, J. (2001) Thermodynamic modeling of solid solutions, In Geiger, C. (ed.) *Solid solutions in silicate and oxide systems of geological importance*, European Mineralogical Union, Notes in Mineralogy, 3, 37-69 (chapter 3).
- Ganguly, J. and Frost, D. L. (2006) Stability of Anhydrous phase B: Experimental studies and implications for phase relations in subducting slab and the X-discontinuity in the mantle. *J. Geophys Research*, 111, DOI: 10.1029/2005JB003910
- Ganguly, J. (2018) Effect of grain size reduction on melting temperature of quartz and implications for seismic slips. *Amer Min* (in review)
- Ganguly, J. and Saxena, S. K. (2006) *Mixtures and Mineral Reactions*, 291 p., Springer-Verlag
- Ganguly, J. (2008) *Thermodynamics in Earth and Planetary Sciences*, 501 p., Springer-Verlag

B. Order-Disorder in Minerals (1982 – 1996)

- Ganguly, J. (1982) Chapter in Book: Fe²⁺-Mg order-disorder in ferromagnesian silicates: Thermodynamics, kinetics and geological applications, in S. K. Saxena ed., 'Advances in Physical Geochemistry': vol. 2, p. 58-99.
- Ganguly, J. (1986) Disorder energy versus disorder in minerals: A phenomenological relation and application to orthopyroxene: *Journal of Physics and Chemistry of Solids*, 47, p. 417-420
- Ganguly, J., and Tazzoli, V. (1994) Fe-Mg interdiffusion in orthopyroxene: Retrieval from the data on intracrystalline exchange reaction: *American Mineralogist*, 79, 930-937.
- Ganguly, J. and Domeneghetti, M. C. (1996) Cation ordering of orthopyroxenes from the Skaergaard intrusion: Quantitative constraints on the subsolidus cooling rates and permeabilities, *Contributions to Mineralogy & Petrology*, 122, 359-367.

C. Diffusion Kinetics and Heat Transfer (1982-) (also see D and E)

- Loomis, T.P., Ganguly, J. and S.C. Elphick (1985) Experimental determination of cation diffusivities in aluminosilicate garnets: II. Multicomponent simulation and tracer diffusion coefficients, *Contributions to Mineralogy & Petrology*, 90, p. 45-51
- Chakraborty, S., and Ganguly, J. (1991) Chapter in book: Compositional zoning and cation diffusion in garnet, in J. Ganguly, ed., `Diffusion, Atomic Ordering and Mass Transport: Selected Topics in Geochemistry, *Advances in Physical Geochemistry*, 8, p. 120-175.
- Chakraborty, S., and Ganguly, J. (1992) Cation diffusion in aluminosilicate garnets: Experimental determination in spessartine-almandine diffusion couples, evaluation of effective binary diffusion coefficients, and applications. *Contributions to Mineralogy & Petrology* 111, 74 - 86.
- Ganguly, J. (2003) Diffusion kinetics in minerals: principles and applications to tectono-metamorphic processes. In Gramaciioli, C. (ed) Energy modeling of minerals, European Mineralogical Union, *Notes in Mineralogy*, 4, 271- 309.
- Tirone, M., Ganguly, J., Dohmen, R., Langenhorst, F., Hervig, R. and Becker, H-W. (2005) Rare earth diffusion kinetics in garnet: Experimental studies and applications. *Geochim Cosmochim Acta*, 69, 2385-2398.
- Singh, R. N. and Ganguly (2014) Modelling paleogeotherms in the continental lithosphere: A brief review and applications to problems in the Indian subcontinent. In: S. Kumar and R. N. Singh (Ed.) *Modeling Magmatic and Related Processes*, Springer-Verlag, DOI: 10.1007/978-3-319-06471-0_5
- Ganguly, J. edited (1991) **Diffusion, Atomic Ordering and Mass Transport**, 581 p., Springer-Verlag
- D. Planetary Sciences (1994 -)**
- Ganguly, J., Yang, H., and Ghose, S. (1994) Thermal history of mesosiderites: Quantitative constraints from compositional zoning and Fe-Mg ordering in orthopyroxenes. *Geochimica et Cosmochimica Acta*, 58, 2711-2723
- Ito, M., and Ganguly, J. (2005) Diffusion kinetics of Cr in olivine and ^{53}Mn - ^{53}Cr thermochronology of early solar system objects. *Geochim Cosmochim Acta*, 70, 799-806
- Ganguly, J., Tirone, M., Chakraborty, S., Domanik, K. (2013) H-Chondrite Parent Asteroid: A multistage cooling, fragmentation and re-accretion history constrained by new thermometric studies, kinetic modeling and geochronological data. *Geochim Cosmochim Acta*, 105, 206-220. **Headline article**, *Planetary Science Research and Discovery*
- Bloch, E. and Ganguly, J. (2014) Igneous Age Controversy of the Shergottite Suite of Martian Meteorites: Evaluation of the Shock-Resetting Hypothesis through Diffusion Kinetic Experiments and Modeling, and Petrological Observations. *Earth and Planet Sci Let.*, 395, 173-183.
- Asaduzzaman, A., Muralidharan, K., Ganguly, J. (2015) Incorporation of water into olivine during nebular condensation: Insights from density functional theory and

thermodynamics and implications for phyllosilicate formation and terrestrial water inventory. *Meteor Planet Sci* 50, 578-589; featured in **CosmoSparks**, Planetary Science Research and Discovery

Bloch, E., Watkins, J. and Ganguly, J. (2017) Diffusion kinetics of Leutetium in diopside and the effect of thermal metamorphism on Lu-Hf systematics in clinopyroxene. *Geochim Cosmochim Acta*, 204, 32-51

E. Geochronology: Closure Temperature Theory and Interpretations of Mineral Ages (1995 -)

Ganguly, J., Tirone, M., and Hervig, R. (1998) Diffusion kinetics and closure temperature of Sm and Nd in garnet and a method for determining cooling rates of rocks. *Science*, 281, 805-807

Ganguly, J. and Tirone, M. (1999) Diffusion closure temperature and age of a mineral with arbitrary extent of diffusion: Theoretical formulation and applications, *Earth & Planet Science Letters*, 170, 131-140.

Bloch, E., Ganguly, J., Hervig, R., and Cheng, W. (2015) ^{176}Lu - ^{176}Hf Geochronology of Garnet I. Experimental determination of the diffusion kinetics of Lu^{3+} and Hf^{4+} in garnet, closure temperatures and geochronological implications. *Contrib. Mineral. Petrol.* 169:12 DOI 10.1007/s004-10-015-1109-8.

Bloch, E., and Ganguly, J. (2015) ^{176}Lu - ^{176}Hf Geochronology of Garnet II. Numerical simulations of the development of garnet-whole rock ^{176}Lu - ^{176}Hf isochrons and a new method for constraining the thermal history of metamorphic rocks. *Contrib. Mineral. Petrol.* 169:14 DOI 10.1007/s00410-015-1115-x

F. Field-based Studies: Himalayas (2000 – 2009)

Ganguly, J., Dasgupta, S., Cheng, W. and Neogi, S. (2000) Exhumation history of a section of the Sikkim Himalayas, India: records in the metamorphic mineral equilibria and compositional zoning in garnet. *Earth & Planet Sci Lett*, 183, 471 – 486.

Dasgupta, S., Ganguly, J., Neogi, S. (2004) Inverted metamorphic sequence in Sikkim Himalayas: crystallization history, *P-T* gradient, and implications. *J. Metamorphic Geol.* 22, 395-412

G. Petrological Geodynamics of the Earth's Mantle (2005 -)

Ganguly, J. (2005) Adiabatic decompression and melting of mantle rocks. *Geophys. Research Letters*, 32, L06312, doi:10.1029/2005GL022363, selected as **Editors' Choice** Cover Page article, GRL

Tirone, M., Ganguly, J., Morgan, J.P. (2009) Modeling petrological geodynamics in the Earth's mantle. *G³: Geochemistry, Geophysics, Geosystems* 10, 1-28.

Ganguly J., Freed AM, Saxena SK (2009) Density profiles of oceanic slabs and surrounding mantle: Integrated thermodynamic and thermal modeling, and implications for the fate of slabs at the 660 km discontinuity. *Phys Earth Planet Interiors*, 172, 257-267.

H. Materials Sciences (1973 – 1989)

Dandekar, D.P., Ganguly, J and Bose, K.(1989) Compressions of Ta₁₀W, Kennertium W-2, and BeO to 4.5 GPa. Proc 12th AIRAPT Conf. on High Pressure Sciences and Technology.

Ganguly, J. and G.C. Kennedy (1974) Phase diagram of propargyl alcohol, Journal of Physics & Chemistry of Solids, 35, 605

Ganguly, J. and G.C. Kennedy (1973) The melting temperature of uranium under high pressures, Journal of Physics & Chemistry of Solids, p. 2272-2274.

Akella, J., Ganguly, J., R. Grover, and G.C. Kennedy (1973) Melting of lead and zinc to 60 kilobars: Journal of Physics and Chemistry of Solids, 34, 631-636.

Publications (complete chronological list)

Books

- Ganguly, J., and S.K. Saxena (1987) MIXTURES AND MINERAL REACTIONS, 291 p., Springer-Verlag
- Ganguly, J. (2008) THERMODYNAMICS IN EARTH AND PLANETARY SCIENCES, 501 p. Springer-Verlag (~16,000 chapter downloads from publisher's electronic resource)

Edited volumes

- Ganguly, J., editor (1991) DIFFUSION, ATOMIC ORDERING AND MASS TRANSPORT: Selected Topics in Geochemistry, Advances in Physical Geochemistry, vol. 8, 581 p., Springer-Verlag
- Bhattacharya, S. and Ganguly, J. (2001) Proc. Indian Academy of Science (Earth Science), Special Issue on Petrology and Geochemistry

Papers (peer reviewed journals)

- Ganguly, J. (2018) Effect of grain size reduction on melting temperature of quartz and implications for seismic slips. Amer Min (in review)
- Bloch, E., Watkins, J., Ganguly, J. (2017) Comment on “Reconciliation of the excess ¹⁷⁶Hf conundrum in meteorites: Recent disturbances of the Lu-Hf and Sm-Nd isotope systematics” [Geochimica et Cosmochimica Acta 212 (2017) 303-323] Geochim Cosmochim Acta,
- Henley, R. W. et al. (2017) High temperature gas-solid reactions in calc-silicate Cu-Au skarn formation; Ertsberg, Papua Province, Indonesia. Contrib. Mineral. Petrol., doi.org/10.1007/s00410-017-1413-6
- Bloch, E., Watkins, J., Ganguly, J. (2017) Diffusion kinetics of leutetium in diopside and

the effect of thermal metamorphism on Lu-Hf systematics in clinopyroxene. *Geochim Cosmochim Acta*, 204, 32-51

- Ganguly, J., Tirone, M., Domanik, K. (2016) Cooling rates of LL, L and H chondrites and constraints on the duration of peak thermal conditions: Diffusion kinetic modeling and implications for fragmentation of Asteroids and impact resetting of petrologic types. *Geochim Cosmochim Acta*, 192, 135-148.
- Posner E., Ganguly, J., Hervig, R. (2016) Diffusion kinetics of Cr in spinel: Experimental studies and implications for $^{53}\text{Mn} - ^{53}\text{Cr}$ cosmochronology. *Geochim Cosmochim Acta*, 175, 20 – 35.
- Bloch, E., Ganguly, J., Hervig, R, Cheng, W. (2015) ^{176}Lu - ^{176}Hf Geochronology of Garnet I. Experimental determination of the diffusion kinetics of Lu^{3+} and Hf^{4+} in garnet, closure temperatures and geochronological implications. *Contrib. Mineral. Petrol.* 169:12 DOI 10.1007/s00410-015-1109-8
- Bloch, E. and Ganguly, J. (2015) ^{176}Lu - ^{176}Hf Geochronology of Garnet II. Numerical simulations of the development of garnet-whole rock ^{176}Lu - ^{176}Hf isochrons and a new method for constraining the thermal history of metamorphic rocks. *Contrib. Mineral. Petrol.* 169:14 DOI 10.1007/s00410-015-115-x Incorporation of water into olivine
- Asaduzzaman, A., Muralidharan, K., Ganguly, J. (2015) Incorporation of water into olivine during nebular condensation: Insights from density functional theory and thermodynamics and implications for phyllosilicate formation and terrestrial water inventory. *Meteor Planet Sci* 50, 578-589; featured in **CosmoSparks**, Planetary Science Research and Discovery
- Singh, R. N., Ganguly, J. (2014) Modelling paleogeotherms in the continental lithosphere: A brief review and applications to problems in the Indian subcontinent. In: S. Kumar and R. N. Singh (Ed.) *Modeling Magmatic and Related Processes*, Springer-Verlag, DOI: 10.1007/978-3-319-06471-0_5
- Bloch, E. and Ganguly, J. (2014) Igneous Age Controversy of the Shergottite Suite of Martian Meteorites: Evaluation of the Shock-Resetting Hypothesis through Diffusion Kinetic Experiments and Modeling, and Petrological Observations. *Earth and Planet Sci Let.*, 395, 173-183
- Ganguly, J., Tirone, M., Chakraborty, S., Domanik, K. (2013) H-Chondrite Parent Asteroid: A multistage cooling, fragmentation and re-accretion history constrained by new thermometric studies, kinetic modeling and geochronological data. *Geochim Cosmochim Acta*, 105, 206-220. **Headline article**, Planetary Science Research and Discovery
- Borinski, S.A., Hoppe, U., Chakraborty, S., Ganguly, J., Bhowmik, S.K. (2012) Multicomponent diffusion in garnet I: general theoretical considerations and experimental data for Fe-Mg systems. *Contrib Mineral Petrol.* 164, 571-586.

- Sano, J., Ganguly, J., Hervig, R., Dohmen, R. and Zhang, X-Y (2011) Neodymium diffusion kinetics in orthopyroxene: Experimental studies and applications to geological and planetary problems, *Geochim Cosmochim Acta*, 75, 4684-4698
- Ganguly, J. (2010) Cation Diffusion Kinetics in Garnet and Geological Applications. In Zhang, Y. and Cherniak, D. (Ed) *Diffusion in Minerals and Melts, Reviews in Mineralogy and Geochemistry*, Mineralogical Soc. America, 72, 559-601
- Ottonello G., Civalleri B., Ganguly J., Perger W.F., Belmonte D., and Vetuschi Zuccolini M. (2010) Thermo-chemical and Thermo-physical properties of the high pressure phase Anhydrous B ($Mg_{14}Si_5O_{24}$): An ab-initio all-electron investigation. *Amer Mineral*, 95, 563-573
- Tirone, M., Ganguly, J. (2010) Garnet compositions as recorders of P-T-t history of metamorphic rocks. *Gondwana Research (Miyashiro volume)*, 18, 138-146
- Ganguly, J. (2010) Cation Diffusion Kinetics in Garnet and Geological Applications. In Zhang, Y. and Cherniak, D. (Ed) *Diffusion in Minerals and Melts, Reviews in Mineralogy and Geochemistry*, Mineralogical Soc. America, v. 72, 559-601.
- Martin, A.J., Ganguly, J., DeCelles, P.G. (2009) Metamorphism of greater and lesser Himalayan rocks in the Modi Khola valley, central Nepal. *Contrib Mineral Petrol* DOI 10.1007/s004-10-009-0434-3
- Zhang, X-Y, Ganguly, J., Ito, M. (2009) Ca-Mg Diffusion in Diopside: tracer and chemical inter-diffusion coefficients. *Contrib. Mineral. Petrol.* DOI 10.1007/s00410-009-0422-5.
- Tirone, M., Ganguly, J., Morgan, J.P. (2009) Modeling petrological geodynamics in the Earth's mantle. *G³: Geochemistry, Geophysics, Geosystems* 10, 1-28, doi:10.1029/2008GC002168
- Ganguly, J., Tirone, M. (2009) Closure temperature, cooling age and high temperature thermochronology. In: Gupta, A. K. and Dasgupta, S. (Ed.) *Physics and Chemistry of the Earth's Interior: crust, mantle and core*. Indian National Science Academy, Springer Verlag
- Ganguly J., Freed AM, Saxena SK (2009) Density profiles of oceanic slabs and surrounding mantle: Integrated thermodynamic and thermal modeling, and implications for the fate of slabs at the 660 km discontinuity. *Phys Earth Planet Interiors*, 172, 257-267.
- Ottonello, G., Civalleri, B., Ganguly, J., Vetuschi Z. M., Noel, Y. (2008) Thermophysical properties of α - β - γ polymorphs of Mg_2SiO_4 : a computational approach. *Phys. Chem. Minerals*, 36, 87-106
- Ganguly J., Ito M, Zhang, X-Y (2007) Cr diffusion in orthopyroxene: experimental determination, ^{53}Mn - ^{53}Cr thermochronology, and planetary applications. *Geochim et*

Cosmochim Acta 71, 3915-3925.

- McCallum I.S., Domeneghetti, M.C., Schwartz, J.F., Mullen, E.K., Zema, M., Camara, F., McCammon, C., Ganguly, J. (2006) Cooling history of lunar Mg-suite gabbro-norite 76255, toctolite 76535 and stillwater pyroxenite SC-936: The record in exsolution and ordering in pyroxenes. *Geochim Cosmochim Acta*. 70, 6068-6078.
- Ganguly, J., and Frost, D.L (2006) Stability of Anhydrous phase B: Experimental studies and implications for phase relations in subducting slab and the X-discontinuity in the mantle. *J. Geophys Research*, 111, DOI: 10.1029/2005JB003910
- Ito, M., and Ganguly, J. (2005) Diffusion kinetics of Cr in olivine and ^{53}Mn - ^{53}Cr thermochronology of early solar system objects. *Geochim Cosmochim Acta*, 70, 799-806
- Stimpfl, M., Ganguly, J. and Molin, G.M. (2005) Fe^{2+} -Mg order-disorder in orthopyroxenes: Experimental studies and applications to cooling rates of rocks. *Contrib Mineral Petrol* 150, 319-334
- Ganguly, J. (2005) Adiabatic decompression and melting of mantle rocks. *Geophys. Research Letters*, 32, L06312, doi:10.1029/2005GL022363; **Editors' Choice** Cover Page article of the issue
- Tirone, M., Ganguly, J., Dohmen, R., Langenhorst, F., Hervig, R. and Becker, H-W. (2005) Rare earth diffusion kinetics in garnet: Experimental studies and applications. *Geochim Cosmochim Acta*, 69, 2385-2398.
- Ito, M. and Ganguly, J. (2004) Potassium diffusion in melilites: Experimental studies and constraints on the thermal history and size of planetesimals hosting CAIs. *Meteoritics & Planetary Sciences*, 39, 1911- 1919.
- Dasgupta, S., Ganguly, J., Neogi, S. (2004) Inverted metamorphic sequence in Sikkim Himalayas: crystallization history, *P-T* gradient, and implications. *J. Metamorphic Geol.* 22, 395-412.
- Ducea, M.N., Ganguly, J., Rosenberg, E.J., Patchett, P.J., Cheng, W.J. and Isachsen, C. (2003) Sm-Nd Dating of Spatially Controlled Domains of Garnet Single Crystals: A New Method of High Temperature Thermochronology. *Earth Planet Sci Let.*, 213, 31-42.
- Liermann, H-P. and Ganguly, J. (2003) Fe^{2+} -Mg fractionation between orthopyroxene and spinel: experimental calibration in the system $\text{FeO-MgO-Al}_2\text{O}_3\text{-SiO}_2$, and applications, *Contrib. Mineral. Petrol.* 145, 217-227.
- Ganguly, J. (2003) Diffusion kinetics in minerals: principles and applications to tectono-metamorphic processes. In Gramaccioli, C. (ed) *Energy modeling of minerals*, European Mineralogical Union, Notes in Mineralogy, 4, 271- 309.
- Liermann, H-P. and Ganguly, J. (2002) Diffusion kinetics of Fe^{2+} and Mg in aluminous spinel: experimental determination and applications. *Geochim. Cosmochim. Acta*, 66, 2903-2913

- Ganguly, J., Hensen, B.J. and Cheng, W. (2001) Reaction texture and Fe-Mg zoning in granulite garnet from Soestrene island, Antarctica: Modeling and constraint on the time scale of Pan-African tectono-metamorphic event. *Proc. Indian Acad. Sci*, 110, 305-312.
- Ganguly, J. (2001) Thermodynamic modeling of solid solutions, In Geiger, C. (ed.) *Solid solutions in silicate and oxide systems of geological importance*, European Mineralogical Union, *Notes in Mineralogy*, 3, 37-69 (chapter 3).
- Liermann, H-P., and Ganguly, J. (2001) Compositional properties of coexisting orthopyroxene and spinel in some Antarctic diogenites: Implications for thermal history. *Meteoritics & Planetary Science*, 36, 155 – 166.
- Ganguly, J., and Tirone, M. (2001) Relationship between cooling rate and cooling age of a mineral: Theory and applications to meteorites. *Meteoritics and Planetary Science*, 36, 167 – 176.
- Ganguly, J., Dasgupta, S., Cheng, W. and Neogi, S. (2000) Exhumation history of a section of the Sikkim Himalayas, India: records in the metamorphic mineral equilibria and compositional zoning in garnet. *Earth & Planet Sci Lett*, 183, 471 – 486.
- Ganguly, J. and Stimpfl, M. (2000) Low temperature cooling history of orthopyroxenes from two stony-iron meteorites: implications for metal-silicate mixing and parent body. *Geochim Cosmochim Acta*, 64, 1291 – 1297.
- Ganguly, J. and Tirone, M. (1999) Diffusion closure temperature and age of a mineral with arbitrary extent of diffusion: Theoretical formulation and applications, *Earth & Planet Science Letters*, 170, 131-140.
- Stimpfl, M., Ganguly, J. and Molin G. (1999) Fe²⁺-Mg order-disorder in orthopyroxene: Equilibrium fractionation between the octahedral sites and thermodynamic analysis, *Contrib. Mineral. Petrol.*, 136, 297-309.
- Ganguly, J., Tirone, M., and Hervig, R. (1998) Diffusion kinetics and closure temperature of Sm and Nd in garnet, and a method for determining cooling rates of rocks. *Science*, 281, 805-807
- Ganguly, J., Cheng, W. and Chakraborty, S. (1998) Cation diffusion in aluminosilicate garnets: experimental determination in pyroxene-almandine diffusion couples. *Contrib. Mineral Petrol*, 131, - 180.
- Ganguly, J., Cheng, W. and Tirone, M. (1996) Thermodynamics of aluminosilicate garnet solid solution: new experimental data, an optimized model, and thermometric applications. *Contrib. Mineral. Petrol.*, 126, 137-151.
- Ganguly, J., Chakraborty, S., Sharp, T. and Rumble, D. III (1996) Constraint on the time scale of biotite grade metamorphism during Acadian orogeny from a natural garnet-garnet diffusion couple. *American Mineralogist*, 81, 1208-1216.

- Ganguly, J. and Domeneghetti, M. C. (1996) Cation ordering of orthopyroxenes from the Skaergaard intrusion: Quantitative constraints on the subsolidus cooling rates and permeabilities, *Contributions to Mineralogy & Petrology*, 122, 359-367.
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