Curriculum Vitae

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-Al_2O_3-SiO_2-H_2O-O_2.

Professional Appointments

- 1975 – 2016: Assistant Professor, Associate Professor, Full Professor (1986 -), Department of Geosciences, University of Arizona
- 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.
- 2011: Honorary Professor, Indian Institute of Science Education and Research

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 "Gematerials 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, 2011

Special Invitations

- Invited Scientist: Council of Scientific and Industrial Research, Govt of India, under the sponsorship of United Nations program on `Transfer of know-how through expatriate Nationals (TOKTEN).
- Chinese Academy of Sciences, 2000
- Chief Guest at the 2018 Convocation of the Indian Institute of Engineering, Science and Technology (IIEST), erstwhile Bengal Engineering and Science University; delivered the Convocation Address.

Academic Honors

Alexander von Humboldt Research Prize (forschungspreis), Germany

Fellow, American Geophysical Union

Fellow, Mineralogical Society of America

Research & Publications

Through a long career, my research has covered a wide spectrum of topics in Earth and Planetary Sciences, with publications in international journals in **Petrology, Mineralogy, Mineral Physics, Geophysics, Geochemistry, Planetary Sciences and Material Sciences**. The major research topics and selected publications under different categories (**excluding books/monographs**) are as follows. This is followed by a chronological list of all publications.

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

Research Topics and Selected Publications

A. Phase Equilibria, Thermodynamics, and Geothermo-barometry (1967-2021)

Ganguly, J. (1969) Chloritoid stability and related parageneses: theory, experiments and

applications. American Joutnal 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-Al_2O_3-SiO_2, 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 ^oC 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

Asaduzzaman, A. and Ganguly, J (2021) Hydrogen isotope fractionation in the talc-serpentine-brucite-water system: Theoretical studies and implications. ACS Earth Space Chem, 5, 4, 880-889.

B. <u>Order-Disorder in Minerals (1982 – 1996)</u>

Ganguly, J. (1982) Chapter in Book: Fe^{2+}- 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) Disordering 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 B, D and E)*

Elphick, S.C., J**. Ganguly**, and T.P. Loomis (1985) Experimental determination of cation diffusivities in aluminosilicate garnets: I. Experimental methods and interdiffusion data, Contributions to Mineralogy & Petrology, 90, 36-44.

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

Ganguly, J., R. Bhattacharya and S. Chakraborty, (1988) Convolution effects in the determination of compositional profile and diffusion coefficient by microprobe step scans. American Mineralogist, 73, p. 901-909.

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 Gramaciolli, 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

D. *Planetary Sciences (1994 - 2017)*

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.

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.

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. 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 176Lu176Hf 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

E. *Field-based Studies (1987 – 2004)*

Ganguly, J. and Bhattacharya, P. K. (1987) Xenoliths in proterozoic kimberlites from southern India: petrology and geophysical implications. In: P. H. Nixon (ed) Mantle Xenoliths, John Wiley, 249-265

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

F. *Petrological Geodynamics of the Earth's Mantle (2005 -2009)*

Ganguly, J. (2005) Adiabatic decompression and melting of mantle rocks. Geophys. Research Letters, 32, L06312, doi:10.1029/2005GL022363

Tirone, M., **Ganguly,** J., Morgan, J.P. (2009) Modeling petrological geodynamics in the Earth's mantle. G^3: 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.

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 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, *1st edition*, 501 p; *2nd edition* (2020), 610 p. Springer-Verlag. (https://www.springer.com/in/book/9783030208783)
- **Ganguly, J.** (2019) Meghnad Saha: His Science and Persona Through Selected Letters and Writings, i-xviii, 1-242 p., Indian National Academy of Science, New Delhi (http://www.insaindia.res.in/pdf/Megnad_Saha.pdf)

Geochemical Perspective Volume

- **Ganguly, J.** (2021) Academic Reminiscences and Thermodynamics-Kinetics of Thermo-Barometry-Chronology. Geochemical Perspective, v, 10, no. 1, 156 p. (https://www.geochemicalperspectives.org/)

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)

Asaduzzaman, A. and **Ganguly, J** (2021) Hydrogen isotope fractionation in the talc-

serpentine-brucite-water system: Theoretical studies and implications. ACS Earth Space Chem, 5, 4, 880-889.

- Asaduzzaman, A. and **Ganguly, J** (2018) Hydrogen isotopic fractionation in the epidote-hydrogen and epidote-water systems: theoretical study and implications. ACS Earth and Space Chemistry, 2, 1029-1034
- Bloch, E., Watkins, J., **Ganguly, J**. (2017) Comment on "Reconciliation of the excess ^{176}Hf 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
- Posner E., **Ganguly, J**., Hervig, R. (2016) Diffusion kinetics of Cr in spinel: Experimental studies and implications for 53Mn – 53Cr cosmochronology. Geochim Cosmochim Acta, 175, 20-35
- Bloch, E., and **Ganguly, J**. (2015) ^{176}Lu-^{176}Hf Geochronology of Garnet II. Numerical simulations of the development of garnet-whole rock 176Lu176Hf 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
- 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.
- 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.
- 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, SpringerVerlag, 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.

- 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 Cherkiak, 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 calley, central Nepal. Contrib Mineral Petrtol 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. G^3: 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 cChemistry 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.

- 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 gabbronorite 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 (in press)

- 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

- 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.

- 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 FeO-MgO-Al2O3-SiO2, and applications, Contrib. Mineral. Petrol. 145, 217-227.

- **Ganguly, J**. (2003) Diffusion kinetics in minerals: principles and applications to tectono-metamorphic processes. In Gramaciolli, 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) Fe^{2+}-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. Science, 281, 805-807.

- . **Ganguly, J**., Cheng, W. and Chakraborty, S. (1998) Cation diffusion in aluminosilicate

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