UPAMA DUTTA

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PROFESSIONAL EXPERIENCE

2023-2024: Associate Professor, Department of **Applied Geology**, **Indian School of Mines**, Dhanbad.
2013-2023: Assistant Professor, Department of **Applied Geology**, **Indian School of Mines**, Dhanbad.

EDUCATION

2005 – 2010: **Ph.D.** in **Geology** from Department of Geological Sciences, **Jadavpur University**, West Bengal, India.
2003 – 2005: **M.Sc.** in **Applied Geology** from Department of Geological Sciences, **Jadavpur University**, West Bengal, India**.**
2000 – 2003: **B.Sc.** in **Geology** from Department of Geological Sciences, **Jadavpur University**, West Bengal, India**.**

Ph.D. DISSERTATION TITLE

Petrology of a suite of mafic rocks and metapelites from parts of the Southern Granulite Terrain, South India.

Supervisors:

Pulak Sengupta (Professor, Department of Geological Sciences, Jadavpur University).
Uttam K. Bhui (Professor, School of Petroleum Technology, Gandhinagar).

RESEARCH INTEREST

I am interested to study the Precambrian metamorphic rocks, in particular, the processes associated with P-T-t evolution of rock interpreted from microstructures. My research focuses on identifying the length, agent, process effecting stability of minerals in rocks and their large scale implication. Broadly understanding relationships between deformation and metamorphic processes, from the grain scale to the regional scale.

PUBLICATIONS

- Chatterjee, S.M., Manna, A., Roy, A., Sarkar, A.K., Das, S. and **Dutta, U.** (2025). Significance of~ 1Ga granites from the South Delhi Fold Belt, NW India: Implications for paleogeographic reconstructions of Rodinia. **Journal of the Geological Society**, pp.jgs2024-062.

- Chakraborty T, Syed TH, Heggy E, Putrevu D, **Dutta U**. (2024). On the reachability and genesis of water ice on the Moon. ISPRS **Journal of Photogrammetry and Remote Sensing**. 1;211:392-405.

- Chakrabarty, A., Karmakar, S., **Dutta, U.**, Sanyal, S., & Sengupta, P. (2024). Evidence of fluid-induced myrmekite formation after alkali-feldspar megacrysts: an example from a meta-porphyritic granitoid in Makrohar, Madhya Pradesh, India. **Mineralogical Magazine**, 88(3), 262-276.

- **Dutta, U.,** Sarkar, A. K., Chatterjee, S. M., Manna, A., Roy, A., & Das, S. (2022). Petrological implications of element redistribution during metamorphism: insights from meta-granite of the South Delhi Fold Belt, Rajasthan, India. **Geological Magazine**, 159(5), 735-760.

- Adak, V. and **Dutta, U.** (2021). Genesis of coronae and implications of an early Neoproterozoic thermal event: a case study from SE Chotanagpur Granite Gneissic Complex, India. **Geological Magazine**, 158(2), 199-218.

- Karmakar, S., Mukherjee, S., and **Dutta, U.** (2020). Origin of corundum within anorthite megacrysts from anorthositic amphibolites, Granulite Terrane, Southern India. **American Mineralogist**, 105(8), 1161-1174.

- Dey, A., Karmakar, S., Mukherjee, S., Sanyal, S., **Dutta U.** and Sengupta P. (2019). High Pressure metamorphism of mafic granulites from the Chotanagpur Granite Gneissic Complex, India: Evidence for collisional tectonics during assembly of Rodinia. **Journal of geodynamics**, 129, 24-43.

- Banerjee, M., **Dutta, U.**, Anand, R. and Zachary, A. (2019). Insights on the process of two-stage coronae formation at olivine-plagioclase contact in mafic dyke from Palghat Cauvery Shear Zone, Southern India. **Mineralogy and Petrology**, 113, 625–649.

- Mukherjee, S., Dey, A., Sanyal, S., Ibanez-Mejia, M., **Dutta., U.** and Sengupta, P. (2017). Petrology and U –Pb geochronology of zircon in a suite of charnockitic gneisses from parts of the Chotanagpur Granite Gneiss Complex (CGGC): evidence for the reworking of a Mesoproterozoic basement during the formation of the Rodinia supercontinent. In: Pant, N.C. & Dasgupta, S. (eds) Crustal Evolution of India and Antarctica: The Supercontinent Connection. **Geological Society, London, Special Publications**, 457.

- **Dutta**, **U.,** Bhui, U. K., Sengupta P., Sanyal, S. and Mukhopadhyay D. (2011). Magmatic and metamorphic imprints in 2.9 Ga chromitites from the Sittampundi Layered Complex, Tamil Nadu, India. **Ore Geology Reviews**, 40, 90-107**.**

- Sengupta, P., **Dutta**, U., Bhui, U. K. and Mukhopadhyay D. (2009). Genesis of wollastonite- and grandite- rich skarns in a suite of marble-calc-silicate rocks from Sittampundi, Tamil Nadu: Constraints on the P-T-fluid regime in parts of the Pan-African mobile belt of South India. **Minerology and Petrology**, 95, 179–200.

- Sengupta, P., Bhui, U. K., Braun, I., **Dutta**, **U.** and Mukhopadhya D. (2009). Chemical substitutions, paragenetic relations, and physical conditions of formation of högbomite in the Sittampundi layered anorthosite complex, south India. **American Mineralogist**, 94, 1520–1534.

ABSTRACT AND PRESENTATION

International

- Karan, S., **Dutta, U.**, Roy, S., and Chatterjee, S. (2022). Role of small-scale competency variation on the syn-tectonic neoblast occurrence and distribution (Geological Society of America Abstracts with Programs. Vol. 54, No. 5, doi: 10.1130/abs/2022AM-381389)
- Banerjee, M., **Dutta, U.,** Adak. V., and Ghosh, R. (2022) Parameters characterizing influence on product composition in metamorphic reaction: An approach using chemical potential diagram. (Geological Society of America Abstracts with Programs. Vol. 54, No. 5, doi: 10.1130/abs/2022AM-383835)
- Banerjee, M., Adak. V., and **Dutta, U**. (2020). Identifying parameters on genesis of coronal phases at olivine-plagioclase contact: A comparison from different geological terrane. (accepted in EGU General Assembly 2021)
- Banerjee, M. and **Dutta, U**. (2020). Genesis of two distinct types of coronae assemblages at clinopyroxene-plagioclase contact in mafic dyke from Southern Granulite Terrane (SGT), India. (Geological Society of America conference, Vol 52, No. 6, doi: 10.1130/abs/2020AM-357942).
- Adak. V., Banerjee, M. and **Dutta, U**. (2020). What controls the chemico-mineralogy of coronal assemblage formed at olivine-plagioclase contacts? (Geological Society of America conference, Vol 52, No. 6, doi: 10.1130/abs/2020AM-358995).
- Roy, S. Dutta, U. and Chatterjee, S. M. (2020). An assessment of factors controlling reaction, growth and kinematics of phases during metamorphism : A case study from Neem Ka Thana, Rajasthan Geological Society of America conference, Vol 52, No. 6, doi: 10.1130/abs/2020AM-357945.
- **Dutta, U.** and Banerjee, M. (2020). Layered orthoropyroxene magnetite corona from olivine gabbro: case study from Southern Granulite Terrain, Tamil Nadu, India. (accepted in Humboldt Kolleg 2020 on 'FLOW").

- **Dutta, U.**, Sarkar, A., Chatterjee, S.M., Roy, A. (2020). Effect of element redistribution between micro-domain on metamorphic phases - a case study from South Delhi Fold Belt. (accepted in 36th International Geological Congress, 2020).
- Banerjee, M. and **Dutta, U.** (2020). Coronae forming process at olivine-plagioclase contact: A case study of two mafic rocks from Southern Granulite Terrain and Chotanagpur Gneissic Complex. (accepted in 36th International Geological Congress, 2020).
- Roy, A., Chatterjee, S.M., Sarkar, A., **Dutta, U.**, Das, S. and Manna, A. (2020). Deformation and metamorphic mineral reactions in Grenvillian granitoids of South Delhi Fold Belt, Rajasthan, India and its tectonic significance. (accepted in 36th International Geological Congress, 2020).
- Manna, A. **Dutta, U.**, Chatterjee, S.M., Sarkar, A. and Roy A. (2020). Reaction enhanced deformation during exhumation of meta-gabbro in South Delhi Fold Belt, Rajasthan, India. (accepted in 36th International Geological Congress, 2020).
- Adak. V. and **Dutta, U.** (2020). Single stage corona growth and it's geological significance in mafic rocks from Chotanagpur Granite Gneissic Complex, India. (accepted in 36th International Geological Congress, 2020).
- Banerjee, M. and **Dutta, U.** (2017) Diffusion to dissolution precipitation-evidence of transition of the two stage corona growth: A case study from Namakkal, Tanil Nadu, India. Geological Society of America, Vol. 49, No. 6. doi: 10.1130/abs/2017AM-305406
- Banerjee, M., Banerjee, A., Solanki, B.K., **Dutta, U.**, Bhui, U., Anand, R., Sengupta, P., Mukhopadhyay, D. and Atlas, Z.D. (2017) Evidence of Diffusion Driven Coronae Formation during Pan-African Orogeny in Dolerite Dykes from Southern Granulite Terrain (SGT), Goldschmidt 2017
- Banerjee, A., Banerjee, M., **Dutta, U.,** Sengupta, P., Bhui, U., Rajagopal, A. and Mukhopadhyay, D. (2017). Diffusion controlled corona growth in mafic dykes from Southern Granulite Terrain, India and their petrological implications. *Geophysical Research Abstracts, EGU General Assembly 2017 Vol. 19, EGU2017-17590, 2017*
- Adak, V., **Dutta, U.** and Bhattacharyya, T. (2017). Control of shearing on myrmekite formation in granitoid bodies along the North Purulia Shear Zone. *Geophysical Research Abstracts, EGU General Assembly 2017 Vol. 19, EGU2017-15772, 2017*
- Hazra, M., Nandy, J. and **Dutta, U.** (2017). Disequilibrium texture and compositional relation of Ca-amphiboles in metagabbro near Tsundupalle Greenstone Belt: implications for fluid aided reactions. *Geophysical Research Abstracts, EGU General Assembly 2017 Vol. 19, EGU2017-15255, 2017*
- Bauri, S., **Dutta, U.**, Uttam K. Bhui, U. K. & Sengupta, P. 2016. Exsolution textures in pyroxenes from metamorphosed Banded Iron Formation from parts of the Southern Granulite Terrane, India: evidence of UHT metamorphism during late Archaean time. *Geological Society of America, Vol. 48, No. 7. doi: 10.1130/abs/2016AM-284681*
- Banerjee, M., **Dutta, U.**, Bhui, U. K. & Anand, R. 2016. On The Genesis Of Multilayer Coronae Between Olivine And Plagioclase In Gabbro Dyke From Elachipalayam, Tamil Nadu, South India. *Geological Society of America 2016, Vol. 48, No. 7. doi: 10.1130/abs/2016AM-284683*

- Dey, A.,Mukherjee, S.,Sanyal, S., **Dutta., U.**, Sengupta, P. 2015. Petrology and in situ monazite dating of a suite of metapelites in and around Dindigul, Tamil Nadu, India: Evidence of ultra high temperature metamorphism in parts of Madurai Province during mid Neoproterozoic time. In: *Abstract Volume of the International Conference on Electron Microscopy and 36th annual meeting of the Electron microscope society of India, Indian Institute of Technology,Bombay, 210.*

National

- Hajra, M. , Chattaraj, J. and **Dutta, U.** (2018) Rheological control on the growth of porphyroblasts in the metasediments from Ajabgarh Formation of Delhi Supergroup, Rajasthan. Rock Deformation & Structures (RDS-V) conference, Delhi University, Delhi, 2018
- Chattaraj, J., Shukla, U. and **Dutta, U.** 2018. Reaction Textures in Banded Iron Formation (BIF) from Kanjamalai Hills, Southern Granulite Terrain (SGT). National Seminar on Dynamics of Surface and Sub surface Geological processes. *National Seminar on Dynamics of Surface and Subsurface Geological Processes February 8 – 9, 2018 Department of Earth Sciences, Pondicherry University.*

- Hajra, M. and **Dutta, U.** 2018. Effect of sampling biasness on bulk composition and related geological interpretation using pseudosection modelling: a Monte Carlo assessment. *National Seminar on Dynamics of Surface and Subsurface Geological Processes February 8 – 9, 2018 Department of Earth Sciences, Pondicherry University.*

RESEARCH PROJECT

- Influence of micro-domain phase variation on kinematic and metamorphic reactions in assessing petrological evolution of rocks. **Core Research Grant (CRG/2019/004573)** funded by **SERB**, Government of India for the period of **3 years from 2020**. **Role-P. I.** (Co P.I.-Dr. Sadhana M. Chatterjee, Jadavpur University).

- Structural and petrological evolution across South Delhi Fold Belt: the geodynamic evolution of the Precambrian terrane of northwestern India. Funded by **CSIR (Scheme No. 24(0359)/19/EMR-II),** India for the time period of **3 years from 2019** . (Role-Co-P. I.; P. I. - Dr. Sadhana M. Chatterjee and Co P. I. Prof. Sudipta Sengupta from Jadavpur University)**.**

- Petrological and Tectonic Significance of Archaean Banded Iron Formation (BIF) from parts of the Palghat Cauvery Shear Zone (PCSZ) of South India. Research Project **(No. SR/FTP/ES-115/2012)** under Fast Track Proposals For Young Scientists funded by

Science & Engineering Reasearch Board (SERB), Government of India for the period of **2013-2017**.