

DR. GURUMURTHY GP

Scientist-C, Birbal Sahni Institute of Palaeosciences (BSIP)
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Date of Birth: March 26, 1986

Nationality: Indian

**Education**

- Ph D (2009-2013) Geochemistry from Manipal University (presently MAHE), Manipal
Dissertation: Major ion, trace element and organic carbon geochemistry of river Nethravati, southwest coast of India
- Master of Science (2006-2008). Earth Science and Resource Management, Department of Applied Geology, Kuvempu University, Shivamogga, Karnataka
- Bachelor of Science (2003-2006), Sahyadri Science College, Kuvempu University, Shivamogga, Karnataka

Research expertise and interests

- Trace element biogeochemistry and anthropogenic impacts on fluvial systems
- Low-temperature geochemistry, and isotope geochemistry
- Interplay between climate-tectonics and ocean biogeochemistry
- Weathering, provenance and redox evolution of sedimentary basins of India
- Geochemical evolution of surface and marine environments in deep geological time

Work Experience

- Scientist-C (July 01, 2021 to present), Birbal Sahni Institute of Palaeosciences, Lucknow
- INSA-JSPS Postdoctoral Fellow (Jan 2019 – Aug 2019), Institute for Chemical Research, Kyoto University, Japan
- Visiting Scientist (2018 – 2019), Laboratoire Domaines Oceaniques: Plouzane, Bretagne, France
- Scientist-B (April 2017 – June 30, 2021), Birbal Sahni Institute of Palaeosciences, Lucknow
- Postdoctoral Research Fellow (Sept 2013 - Mar 2017), MCNS, Manipal University, Manipal
- Ph D Research Scholar (Jan 2012 - Jul 2013), Manipal University, Manipal
- Raman-Charpak Fellow (Jun 2011 - Dec 2011) Geoscience Environnement Toulouse (GET), France
- Senior Research Fellow (Jul 2010 - Jun 2011), Manipal Institute of Technology (MIT), Manipal University, Manipal
- Visiting Ph D Scholar (2009 – 2010), Geoscience Environnement Toulouse (GET), France
- Junior Research Fellow (Jul 2008 - Jul 2010), Manipal Institute of Technology (MIT), Manipal University, Manipal

Awards, Fellowships and recognitions

- INSA-JSPS award - India- Japanese Joint Project on Est. of Young Researchers Fellowship Programme 2018-19
- Laboratoire Domaines Oceaniques: Plouzane, Bretagne, FR (Invited Researcher LabexMER Axis 4, Nov-Dec, 2018)
- International Travel Grant (2016) by the Geochemical Society to participate in Goldschmidt at Yokohama, Japan
- International Travel Grant, SERB-DST, Government of India to participate in ISOCAMP-2013 and Goldschmidt 2016
- Young Scientist Research Grant (2014), SERB-DST Government of India
- UGC- DS Kothari Postdoctoral Fellowship (declined)
- Short-Course Scholarship, University of Utah, USA for attending ISOCAMP-2013
- Raman-Charpak Fellowship (2011), Science and Technology Service, Embassy of France in India. New Delhi
- Elsevier-IAGC Ph D Student Research Grant (2010) by International Association of Geochemistry (IAGC), USA

Student mentoring/ Supervision:**Doctoral Research Students**

1. **Mr Mahboob Alam**, Enrolled for PhD in Banaras Hindu University, Varanasi in 2018
2. **Mr Faizan Ahmed Khan**, Enrolled for PhD in ACSIR, New Delhi in 2022

Master's Dissertation/Internship

1. **Ms Prashansa Agarwal**, Department of Geology, Manipal Institute of Technology, Manipal
2. **Ms S Kruthika**, Department of Geology, Manipal Institute of Technology, Manipal
3. **Mr Dhanal Singh**, Indian Institute of Science Education and Research, Bhopal

List of Research Publications (*corresponding author; #student first author)**I. Accepted or published papers/work (*corresponding author; #Ph D student first author) :**

Total No. of Publications: 23

Cumulative IF: 73.734 (Citations: 362; H index: 11; i10 index: 13)

01. M Alam#, M Tripti, **GP Gurumurthy***, M Arif, AD Singh, T Radhakrishna, DK Pandey, K Verma (accepted). Exploring the erosional history of the western Himalayas and its link to hydroclimatic conditions since the late Miocene: insights from the IODP Site U1457 of Laxmi Basin in the northeastern Arabian Sea. **Geological Magazine**, Cambridge University Press (IF: 2.656).
02. **GP Gurumurthy***, M Tripti, K Balakrishna, J Riotte, S Audry, HN Udayashankar (accepted). Geochemical characterization of suspended sediments in the Nethravati estuary, southwest coast of India: insights to redox processes, metal sorption and pollution aspect. In Coasts, estuaries and lakes: implications to sustainable development (eds. N Jayaraju, G Sreenivasulu, M. Madakka, M Manjulatha), Springer Nature.
03. M Tripti, L Lambs, **GP Gurumurthy**, I Moussa, K Balakrishna (2022). Isotopic fingerprinting of dual monsoon moisture sources, evapotranspiration process and microclimate manifestation over tropical rainforest region, western part of western Ghats, India. **Journal of Hydrology**, 612 (B), 128239 (IF: 6.708).
04. PK Sarath, KR Mangalaa, D Cardinal, **GP Gurumurthy**, A Dapoigny, VVSS Sarma, J Riotte (2022). Seasonal, weathering and water use controls of Si cycling along the river flow in two contrasting basins of South India. **Chemical Geology**, 604, 120883 (IF: 4.685).
05. M Alam#, M Tripti, **GP Gurumurthy***, Y Sohrin, M. Tsujisaka, AD Singh, S Takano, K Verma (2022). Palaeoredox reconstruction in the eastern Arabian Sea since the late Miocene: Insights from trace elements and stable isotopes of molybdenum ($\delta^{98/95}\text{Mo}$) and tungsten ($\delta^{186/184}\text{W}$) at IODP Site U1457 of Laxmi Basin. **Palaeogeography, Palaeoclimatology, Palaeoecology**, 587, 110790 (IF: 3.565).
06. L Schwendimann, I Sivaprakasam, S Buvaneshwari, **GP Gurumurthy**, S Mishra, L Ruiz, M Sekhar, B Fleiss, J Riotte, S Mani, P Gressens (2021). Agricultural groundwater with high nitrates and dissolved salts given to pregnant mice alters brain development in the offsprings. **Ecotoxicology and Environmental Safety**, 224, 112635 (IF: 7.129).
07. PS Kavali, A. Roy, MD Pasquo, **GP Gurumurthy**, G Sharma, A Kumar, (2021). New age of the lower Talchir Formation in the Wardha Basin, Central India, based on guide palynomorphs present in radiometrically- dated palynozonations in South America, Africa, and Australia. **Ameghiniana**, 58(4), 318-344 (IF: 1.653).
08. SK Dailey, DK Clift, D Kulhanek & **IODP 355 Expedition Scientists** (2020). Large scale mass wasting on the Miocene continental margin of western India. **GSA Bulletin**, 132 (1-2), 85-112 (IF: 5.410).
09. B-K Khim, J Lee, S Ha, J Park, DK Pandey, PD Clift, DK Kulhanek, S Steinke, EM Griffith, K Suzuki, Z Xu, & **IODP Expedition 355 Scientists** (2020). Variations in $\delta^{13}\text{C}$ values of sedimentary organic matter since late Miocene time in the Indus Fan (IODP Site 1457) of the eastern Arabian Sea. **Geological Magazine**, Cambridge University Press, 1-10. (IF: 2.656).
10. M Tripti, **GP Gurumurthy**, L Lambs, J Riotte, K Balakrishna (2018). Water and organic carbon cycles in monsoon-driven humid tropics of the Western Ghats Mountain belt, India: insights from stable isotope approach. **Journal of the Geological Society of India**, Springer, 92, 579-587 (IF: 1.466).
11. S Tripathi, M Tiwari, J Lee, B-K Khim, & **IODP Expedition 355 Scientists**, (2017). First evidence of denitrification vis-à-vis monsoon in the Arabian Sea since Late Miocene. **Scientific Reports**, 7, 43056 (IF: 4.991)
12. **GP Gurumurthy***, M Tripti, J Riotte, R Prakhyath, K Balakrishna (2017). Impact of water-particle interactions on molybdenum budget in humid tropical rivers and estuaries: insights from Nethravati, Gurupur and Mandovi river systems. **Chemical Geology**, Elsevier, 450, 44-58 (IF: 4.685).
13. M Tripti, L Lambs, **GP Gurumurthy**, I Moussa, K Balakrishna, MD Chadaga (2016). Water circulation and governing factors in humid tropical river basins of central Western Ghats, Karnataka, India. **Rapid Communications in Mass Spectrometry**, Wiley Sciences, 30 (1), 175-190 (IF: 2.586).

14. D K Pandey, P D Clift, D K Kulhanek, S Andò, J A P Bendle, S Bratenkov, E M Griffith, **GP Gurumurthy**, & IODP Expedition 355 Scientists (2015). *Arabian Sea Monsoon*. Proceedings of the International Ocean Discovery Program, 355: College Station, TX (IODP).
15. **GP Gurumurthy***, K Balakrishna, M Tripti, J Riotte, S Audry, HNU Shankar (2015). Sources & processes affecting the chemistry of subsurface waters along a tropical river basin, SW India. **Environmental Earth Science**, 73, 333–346 (IF: 3.119).
16. **GP Gurumurthy***, K Balakrishna, M Tripti, J Riotte, S Audry, J-J Braun, HN Udayashankar (2015). Use of Sr isotopes as a tool to decipher the soil weathering processes in a tropical river catchment, SW India. **Applied Geochemistry**, 63, 498-506 (IF: 3.841).
17. DK Pandey, PD Clift, DK Kulhanek, S Andò, JAP Bendle, S Bratenkov, EM Griffith, **GP Gurumurthy**, & IODP Expedition 355 Scientists (2015). Arabian Sea Monsoon: Deep Sea Drilling in the Arabian Sea: Constraining tectonic-monsoon interactions in South Asia. Integrated Ocean Drilling Program: Preliminary Reports, 355, 6-46.
18. **GP Gurumurthy***, M Tripti (2015). Geochemical perspectives on river water of tropical basins, Southwestern India. In: Environmental Management of River Basin Ecosystems, (eds. Ramkumar M, Kumaraswamy K, Mohanraj R), Springer-Verlag, Heidelberg, Germany, 329-353.
19. **GP Gurumurthy**, K Balakrishna, M Tripti, J Riotte, S Audry, J-J Braun, HN Udayashankar (2014). Geochemical behaviour of trace elements in a monsoon dominated humid tropical river basin, southwestern India. **Environmental Science and Pollution Research**, 21, 5098-5120 (IF: 5.190).
20. M Tripti, **GP Gurumurthy**, K Balakrishna, M Chadaga (2013). Dissolved trace element biogeochemistry of a tropical river, Southwestern India. **Environmental Science and Pollution Research**, 20 (6), 4067-4077 (IF: 5.190).
21. M Tripti, L. Lambs, T Otto, **GP Gurumurthy**, R Teisserenc, I Moussa, K Balakrishna, J-L Probst (2013). First assessment of water and carbon cycles in two tropical coastal rivers of south-west India: an isotopic approach. **Rapid Communications in Mass Spectrometry**, 27, 1681-1689 (IF: 2.586).
22. **GP Gurumurthy**, K Balakrishna, J Riotte, JJ Braun, S Audry, HN Udayashankar, BR Manjunatha (2012). Controls on intense silicate weathering in a tropical river, Southwestern India. **Chemical Geology**, 300, 61-69 (IF: 4.685).
23. L Lambs, **GP Gurumurthy**, K Balakrishna (2011). Tracing the sources of water using stable isotopes: first results along the Mangalore-Udupi region, southwest coast of India. **Rapid Communications in Mass Spectrometry**, 25, 2769-2776 (IF: 2.586).

II. Conference presentations/invited talk (selected)

01. **GP Gurumurthy** (2022). Ocean oxygen- past and present at Manipal Institute of Technology, Manipal Academy of Higher Education, Manipal (invited seminar).
02. **GP Gurumurthy** (2021). Ocean oxygen- past and present at International Conference on Earth and Environment during the Anthropocene held at Central University of Karnataka, Gulbarga (lead talk).
03. **GP Gurumurthy** (2020) Weathering of rocks- a vitally important carbon sink and a tracer for palaeoenvironment at Manipal University, Manipal (invited seminar).
04. **GP Gurumurthy** (2019). Nonconservative nature of dissolved molybdenum in the Indian estuaries at Institute for Chemical Research, Kyoto University, Japan (invited talk).
05. **GP Gurumurthy** (2018). Silicate weathering in humid tropics and coastal biogeochemical processes affecting the elemental budgets to Oceans at Laboratoire Domaines Oceaniques: Plouzane, Bretagne, France (invited talk).
06. **GP Gurumurthy**, M Tripti, J Riotte, R Prakyath, K Balakrishna (2016). Nonconservative behavior of dissolved molybdenum in tropical estuarine systems, west coast of India. Goldschmidt conference, Yokohama, Japan
07. **GP Gurumurthy** (2016). Weathering processes and fluvial geochemical transformation of weathered material in small west flowing rivers of the Western Ghats, South India presented in a national workshop “Western Ghats: Evolution and Environmental Issues” at National Centre for Earth System Sciences, Trivandrum.
08. **GP Gurumurthy**, M Tripti, J Riotte, R Prakyath, K Balakrishna (2016). Fluvial transfer of molybdenum in tropical river and estuarine systems, west coast of India: constraints on marine molybdenum budget. National Geo-research Scholars meet 2016 at Wadia Institute of Himalayan Geology, Dehradun, India.
09. **GP Gurumurthy** (2013). Chemical Weathering and associated atmospheric CO₂ drawdown in a humid tropical river basin. Manipal Centre for Natural Sciences, Manipal University (invited talk)
10. **GP Gurumurthy***, K Balakrishna, M Tripti, HN Udayashankar (2012). Hydro-geochemistry of subsurface water in a

humid tropical river basin, southwestern India. National conference on Contemporary Civil Engineering Research and Practices (CCERP-2012) held at MIT, Manipal.

Training and workshop (selected)

01. Participated in a workshop on “School of Analytical Chemistry-2012 (SAC-5), held on November 03-11, 2012 at Department of Chemistry, Indian Institute of Technology, Roorkee, India.
02. Participated in a short course on “Stable Isotope Biogeochemistry and Ecology (ISOCAMP-2013)” held during June 03- 14, 2013 at Department of Biology, University of Utah, Salt Lake City, USA.

Research Projects (as Principal Investigator)

Externally funded Projects:

01. Probing the Evolution of Late Miocene bottom water Oxygenation: a stable metal isotope constraints. IODP-India (Post-Cruise Research Funding), NCPOR-MoES, Government of India (2017 - 2020).
02. Geochemical Behaviour of Platinum Group of Elements (PGE) and Micronutrients in Selected Indian Estuaries and Open Ocean Waters. SERB-DST, Government of India (2014-2017).

In-house Project:

03. Evolution of marine trace metal & carbon inventory during the Proterozoic: implications on ocean-atmosphere evolution. BSIP in-house project (2019-2021).
04. Geochemistry of Tertiary successions of Rajasthan, India: insights in to palaeoenvironmental and palaeoclimatic changes. BSIP in-house project (2018 - 2021).

Geological Field Experience:

- Ocean Expedition:** 1. ORV Sagar Kanya Research Vessel to Arabian Sea and Bay of Bengal (30 days)
2. International Ocean Discovery Program (IODP) 355 Arabian Sea Monsoon Expedition (61 days).

- Geological Field:** 1. Tertiary sedimentary sequences of Jaisalmer and Barmer basin, Western Rajasthan (30 month),
2. Proterozoic Sedimentary Sequences of Cuddapah Basin (50 days)
3. River basins for sampling across India, and estuaries across west coast of India.

Additional Details:

Editorial Board: Associate Editor, Arabian Journal of Geosciences, Springer (2019- till date).

Peer Reviewer for the following Journals

Chemical Geology, Elsevier
 Palaeogeography, Palaeoclimatology, Palaeoecology, Elsevier
 Science of the Total Environment, Elsevier
 Journal of Asian Earth Sciences, Elsevier,
 Journal of Geochemical Exploration, Elsevier
 Hydrological Processes, Elsevier
 Journal of Hydrology, Elsevier
 Applied Water Science, Springer
 Environmental Monitoring and Assessment, Springer
 Journal of Palaeosciences, published by Birbal Sahni Institute of Palaeosciences, Lucknow

Membership to Academic Societies:

International Association of Geochemistry (IAGC), USA
 American Geophysical Union (AGU), USA
 Geochemical Society, USA

Geological Society of America (GSA)

Association for Limnology and Oceanography (ASLO), USA

Research Collaborators: Prof. AD Singh (BHU, Varanasi), Dr M Rabineau & Dr S Lalonde (LGO, Brest), Prof. Y Sohrin & Dr S Takano (ICR, Kyoto), Dr J Riotte (GET, Toulouse); Dr D Cardinal (LOCEAN, Sorbonne Université), Dr M Tripti (NCESS, Trivandrum), Dr AK Singh, & Dr M Arif (BSIP).

Training and workshop (selected)

01. Participated in a workshop on “School of Analytical Chemistry-2012 (SAC-5), held on November 03-11, 2012 at Department of Chemistry, Indian Institute of Technology, Roorkee, India.

02. Participated in a short course on “Stable Isotope Biogeochemistry and Ecology (ISOCAMP-2013)” held during June 03- 14, 2013 at Department of Biology, University of Utah, Salt Lake City, USA.

Laboratory Responsibility in BSIP

Routine maintenance and functioning of ICP-MS and ICP-OES facility at BSIP, Lucknow.

Analytical and instrumental skills

01. Quadrupole Inductively Coupled Plasma Mass Spectrometry (Q-ICP-MS), Agilent 7700x and Perkin Elmer Nixion.

Inductively Coupled Plasma Atomic Emission Spectrometer (ICP-AES/OES), Spectron/Thermo/ Agilent

Acid digestion (microwave and hotplate digestion) protocols for geological and environmental samples.

Pre-concentration of low concentration elements from complex sample matrix including seawater.

Routine trace element and REEs concentration measurement.

Optimization of protocols for elemental ratios in low volume samples/high matrix samples.

02. Voltammetry-Polarography (Metrohm): Anode stripping and Cathode Stripping, and differential Pulse Mode.

03. Ion chromatography (Dionex & Metrohm),

04. Autotitration (Mettler/Metrohm),

05. UV-Vis Spectrophotometer (Hach/Perkin Elmer),

06. Particle Size analyser (Beckman).