Curriculum Vitae

Dr. MOHAMMAD ARIF
Scientist 'C'
Palaeomagnetism Laboratory
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Research Interests

Palaeomagnetism, rock magnetism & environmental magnetism, anisotropy of magnetic susceptibility fabric - applications to geological and environmental problems; Terrestrial meteorite impact crater studies of Lonar, Ramgarh and Dhala structure shocked target rocks, Deccan volcanism etc.

Academic Career

- **July 2020 – Present :** Scientist 'C, Birbal Sahni Institute of Palaeosciences, Lucknow
- **April 2017 – June 2020 :** Scientist 'B', Birbal Sahni Institute of Palaeosciences, Lucknow
- **August 2016 – April 2017 :** Research Associate-II, Dr. K. S. Krishnan Geomagnetic Research Laboratory (IIG), Allahabad on research project entitled "Rock magnetism and anisotropy of magnetic susceptibility (AMS) investigations on the Dhala impact structure"
- **May 2015 – April 2016 :** TWAS-CONACYT Postdoctoral Fellow at Lab of Palaeomagnetism, Instituto de Geofísica, Universidad Nacional Autónoma de México (UNAM), Mexico City on research project entitled "Rock magnetism and Paleomagnetism of Chicxulub crater and K/Pg boundary"
- **May 2013 – May 2015 :** Research Associate at Indian Institute of Geomagnetism (IIG), Navi Mumbai on research project 'Rock magnetic and geochemical studies on Lonar altered basaltic flows and impact products'

Education

- ✓ **Ph.D.** (2007-2013) 'Palaeomagnetism' from Indian Institute of Geomagnetism, Mumbai
  Thesis Title: *Rock Magnetism and Palaeomagnetism of Meteorite Impact Craters in India*

- ✓ **M.Sc.** (2006) Physics (Specialization: Microprocessors), Sri Krishnadevaraya University, Anantapur, Andhra Pradesh
- ✓ **B.Sc.** (2004) Mathematics, Physics, Computer Sciences, Sri Krishnadevaraya University, Anantapur, Andhra Pradesh

Professional Societies Membership

- American Geophysical Union, member since 2011
- Association of Environmental Analytical Chemistry of India (AEACI), BARC, Mumbai, member since 2011

Awards and Fellowships

- TWAS-CONACYT Postdoctoral Fellowship Award 2015 at Institute of Geophysics, National Autonomous University of Mexico (UNAM), Mexico City
- Guest Scientist at Global Geophysics Research Group in Faculty of Mining and Petroleum Engineering, Institut Teknologi Bandung, Indonesia from October – December 2016 (Not Taken)
- DGAPA (Dirección General de Asusntos del Personal Académico) UNAM Postdoctoral Award 2017 at Centro de Geociencias (UNAM), Queretaro, Mexico from March 2017 – February 2019 (Not Taken)
- DST International Travel Grant award to attend European Planetary Science Congress (EPSC) – 2012, Madrid, Spain

Practical and Technical Skills

- **Geological Field:** Experience of palaeomagnetic rock sample collection from Lonar, Ramgarh and Dhala Impact Structures and Mumbai Dykes. Involved in lake sediments sample collection from Lonar Crater Lake, Kolleru Lake and Kashmir Karewa Basin, Field work at Jabalpur, Indore, Sagar (Deccan volcano-sedimentary successions of Madhya Pradesh), Jaisalmer Basin, Cuddapah Basin, Subathu, Dagshai and Kasauli Formations (Uttarakhand and Himachal Pradesh)
- **Laboratory:** Familiar with rock magnetic, palaeomagnetic, and geochemical instruments of Molspin and AGICO JR-6A Spinner Magnetometers, Pulse Magnetizer, Alternating Field and Thermal Demagnetizers, MFK2-FA Kappabridge, Molspin Vibrating Sample Magnetometer

(VSM), Alternating Field Gradient Magnetometer (AGM-2900 Micromag), XRF, CHNS Elemental Analyzer, Scanning Electron Microscopy with Energy Dispersive X-ray analysis, X-ray Diffraction (XRD), Fourier Transform Infrared Spectroscopy (FTIR)

- **Computer:** MATLAB, C, C++, Adobe Illustrator, CorelDraw, Origin, Grapher, Surfer, Sigma Plot, and Microsoft Office

Ongoing Research Projects (In-house)

1. Project No. 3 – Pre- and post-collision biotic turnover(s) and climate change(s) pertaining to India Terminal Cretaceous-Cenozoic [Research Objective: Biotic turnover(s) across K-Pg transition: paleobiodiversity and paleobiogeography]
2. Project No. 8 – Quaternary Monsoon/Climate reconstruction through high resolution multi-proxy studies of lacustrine archives from Central India (Core Monsoon Zone and Indo-Gangetic Plain) (as an 'Associate Member')

Guidance/Supervision

Doctoral:

1. *Mr Sarvendra Pratap Singh*, Ph.D. (Geology) Thesis submitted in August'2023, Banaras Hindu University, Varanasi

Master's:

1. *Ms Isha Singh*, Department of Geology, Lucknow University, Lucknow

Honorary Position

- ✓ *Assistant Professor (Physical Sciences),* Academy of Scientific and Innovative Research (AcSIR), CSIR-HRDC Campus, Ghaziabad, Uttar Pradesh, India

Research Publications

1. S.P. Singh, A.K. Singh, **M. Arif***, V. Prasad, M. Venkateshwarlu and A.S. Naik (2023). Magnetostratigraphy and Sedimentology of Deccan Intertrappean Succession from Sagar, Central India: Insights into palaeoenvironment and end-Cretaceous palaeogeography. ***Communicated to Journal of the Geological Society of India*** [IF: 1.3].
2. A. Kumar, D.M. Maurya, B. Phartiyal, **M. Arif**, N. Khonde, R. Bhushan, P.S. Jena, A. Dabhi, and L.S. Chamyal (2023). Holocene evolution of the Banni Plain at the north-

east margin of the Arabian Sea: Constraints from a *ca* 50 m long sediment core. ***The Depositional Record*** (In press) [IF: 2.4].

3. M. Alam, M. Tripti, G.P. Gurumurthy, **M. Arif**, A.D. Singh, T. Radhakrishna, D.K. Pandey, K. Verma (2023). Hydroclimatic conditions and sediment provenance in the northeastern Arabian Sea since the late Miocene: insights from geochemical and environmental magnetic records at IODP Site U1457 of the Laxmi Basin. ***Geological Magazine***, v. 160(4), 813-829 [IF: 2.656].
4. R. Ghosh, K. Saikia, O. Biswas, S. Agrawal, P. Morthekai, **M. Arif**, B. Phartiyal, A. Sharma, N. Singh, D.K. Paruya, P. Maharana, M. Shekhar and S. Bera (2023). Last 10 millennial history of Indian summer monsoon in the Bengal region–a multi-proxy reconstruction from a lacustrine archive. ***Palaeogeography, Palaeoclimatology, Palaeoecology***, v. 609, 11308 [IF: 3].
5. S. Mishra, S.P. Singh, **M. Arif**, A.K. Singh, G. Srivastava, B.R. Ramesh, and V. Prasad (2022). Late Maastrichtian vegetation and palaeoclimate: Palynological inferences from the Deccan Volcanic Province of India. ***Cretaceous Research***, v. 133, 105126 [IF: 2.1].
6. M. Kumar, K. Saikia, S. Agrawal, R. Ghosh, S.N. Ali, **M. Arif**, D.S. Singh, A. Sharma, B. Phartiyal, and S. Bajpai (2022). Climatic control on the C_3 and C_4 plant abundance during the late Pleistocene– Holocene in the northern Gangetic Plain, India. ***Palaeogeography, Palaeoclimatology, Palaeoecology,*** v. 591, 110890 [IF: 3].
7. **M. Arif*** and S. Misra (2021). Rock magnetism of ejected basaltic boulders from Lonar crater, India: Implications for the existence of a short-lived impact-generated weak magnetic field. ***Meteoritics & Planetary Science***, v. 56, p. 794–808 [IF: 2.487].
8. S. Ali, B. Phartiyal, A. Taloor, **M. Arif**, and B.P. Singh (2021). Provenance, weathering, and paleoclimatic records of the Pliocene-Pleistocene sequences of the Himalayan foreland basin, NW Himalaya. ***Arabian Journal of Geosciences***, v. 14, p. 1–14 [IF: 1.827].
9. R. Agnihotri, N. Patel, P. Srivastava, A. Ambekar, **M. Arif**, A. Kumar, B. Phartiyal, and A. Kumar (2021). A new chronology based on OSL and radiocarbon dating for the archaeological settlements of Vadnagar (western India) along with magnetic and isotopic imprints of cultural sediments. ***Journal of Archaeological Science: Reports***, v. 38, p. 103045 [IF: 3.216].

10. A. Kumar, D.M. Maurya, N. Khonde, B. Phartiyal, **M. Arif**, L. Giosan, and L.S. Chamyal (2021). Holocene paleoenvironmental changes in the marginal marine basin of Great Rann of Kachchh, western India: Insights from sedimentological and mineral magnetic studies on a ~60 m long core. ***Quaternary International***, v. 599, p. 138–147 [IF: 2.13].
11. S. N. Ali, S. Agrawal, M. F. Quamar, J. Dubey, N. Chauhan, P. Bisht, P. Pandey, **M. Arif**, M. Shekhar, P. Morthekai (2020) Climate variability in the central Himalayas during the last ~15 kyr: Evidence of precipitation variability from multiproxy studies. ***Journal of the Palaeontological Society of India***, v. 65(1), p. 36–54.
12. S. Misra, P. K. Srivastava and **M. Arif** (2019); Remote sensing, structural and rock magnetic analyses of the Ramgarh structure of SE Rajasthan, Central India - Further clues to its impact origin and time of genesis in ***"Tectonics and Structural Geology: Indian Context", Springer Geology***, Book Edited by Dr. Soumyajit Mukherjee, IIT Mumbai, pages: 327-352 [Citations: 6]
13. Ali, S.N., Dubey, J., Ghosh, R., Quamar, M.F., Sharma, A., Morthekai, P., Dimri, A.P., Shekhar, M., **Arif, M**., Agrawal, S. (2018); High frequency abrupt shifts in the Indian summer monsoon since Younger Dryas in the Himalaya: ***Scientific Reports***, 8 (1), 9287 [IF: 4.011; Citations: 46]
14. P. Bhavani, Ch. Rajababu, **M. Arif**, I. V. S. Reddy and N. R. Reddy (2017); Synthesis of high saturation magnetic iron oxide nanomaterials via low temperature hydrothermal method: ***Journal of Magnetism and Magnetic Materials***, 426, p. 459-466 [IF: 2.717; Citations: 17]
15. P. Bhavani, Ch. Rajababu, **M. Arif,** I. V. S. Reddy and N. R. Reddy (2016); Synthesis and characterization of iron oxide nanoparticles prepared hydrothermally at different reaction temperatures and pH: ***International Journal of Materials Research***, 107(10), pp.942-947 [IF: 0.687; Citations: 03]
16. **M. Arif**, N. Basavaiah, S. Misra, and K. Deenadayalan (2012), Variations in magnetic properties of target basalts with the direction of asteroid impact: Example from Lonar crater, India: ***Meteoritics & Planetary Science***, 47, p. 1305–1323 [IF: 2.863; Citations: 13]
17. S. Misra, **M. Arif**, N. Basavaiah, P. K. Srivastava, and A. Dube (2010), Structural and anisotropy of magnetic susceptibility (AMS) evidence for oblique impact on terrestrial

basalt flows: Lonar crater, India: ***Geological Society of America Bulletin***, 122, p. 563–574 [IF: 3.970; Citations: 25]

Conference Abstracts/Proceedings

1. **M. Arif**, A.K. Singh, S.P. Singh, V.V. Kapur and V. Prasad (2022) - Magnetostratigraphy and Sedimentology of Deccan volcano-sedimentary succession from Malwa subprovince, central India (Oral presentation). 38th Convention of Indian Association of Sedimentologists (IAS-2022) & National Conference on Current Understanding from the Indian Sedimentary Basins and Road Ahead, held at Department of Geology, University of Delhi from 9-11 December 2022.
2. S.P. Singh, **M. Arif**, A.K. Singh and V. Prasad (2022), Palaeomagnetic results from Deccan Intertrappean Section, Sagar, Madhya Pradesh: 28th Indian Colloquium of Micropaleontology and Stratigraphy (ICMS)-2022, held at Department of Environmental Sciences, Savitribai Phule Pune University from 15-17th Feb 2022.
3. **M. Arif**, S.P. Singh, A.K. Singh and V. Prasad (2020). Magnetostratigraphy, Sedimentology and Palynology of Deccan volcano-sedimentary sections from Jabalpur and Sagar districts, Madhya Pradesh, India. 36th International Geological Congress (IGC), 2–8 March, 2020 Delhi, India.
4. S.P. Singh, **M. Arif**, A.K. Singh and V. Prasad (2020). Magnetostratigraphy and palynological results from Gaumukh Intertrappean Section, Jabalpur, Madhya Pradesh, India. 36th International Geological Congress (IGC), 2–8 March, 2020 Delhi, India.
5. **M. Arif**, S.P. Singh, A.K. Singh and V. Prasad (2019). Magnetostratigraphy of Deccan volcano-sedimentary succession of Mothi village, Sagar, Madhya Pradesh. 27th meeting of Indian Colloquium of Micropaleontology and Stratigraphy (ICMS), Department of Geology, BHU, Varanasi from 4-6th November 2019.
6. A.K. Singh, G.P. Gurumurthy, M. Alam, M. Rabineau, **M. Arif** and M. Shadman Palaeoenvironment and provenance characteristics of Paleogene sediments of Jaisalmer basin, Rajasthan, India. 27th meeting of Indian Colloquium of Micropaleontology and Stratigraphy (ICMS), Department of Geology, BHU, Varanasi from 4-6th November 2019.
7. N. Singh, O. Biswas, K. Saikia, **M. Arif**, D.K. Paruy, R. Ghosh, S. Bera and B. Phartiyal (2019). Effect of Holocene climate changes on lake ecosystem: A multi-proxy study from the upper Bengal Bain, West Bengal. 27th meeting of Indian Colloquium of

Micropaleontology and Stratigraphy (ICMS), Department of Geology, BHU, Varanasi from 4-6th November 2019.

8. **M. Arif (2017)**, Rock magnetic characterization of impact shocked products from Lonar Crater: National Seminar on Deccan Volcanism and Biotic Events across the K/T Boundary, held October 26–28, 2017, Dept. of Applied Geology, Dr. Harisingh Gour University, Sagar, Madhya Pradesh (Oral Presentation)
9. **M. Arif (2016)**, First Order Reversal Curves (FORC) of Impact Products from Lonar Crater: 47th Lunar and Planetary Science Conference, held March 21–25, 2016 in The Woodlands, Texas, LPI Contribution No. 1714
10. **M. Arif** and Jaime Urrutia Fucugauchi (2015), Rock magnetic and Paleomagnetic Studies of Basaltic Impact Craters from India and Brazil: UGM-2015 Conference, Puerto Vallarta, Mexico
11. **M. Arif** and N. Basavaiah (2014); Rock magnetism and palaeomagnetism of Lonar Impact Crater: Implications for magnetic effects of shock on Moon and Mars (Invited Talk: 50th Indian Geophysical Union, NGRI, Hyderabad)
12. S. Misra, **M. Arif,** H. Newsom, and D. Ray (2013a), Hydrothermal alteration of Lonar crater basalts, India - impact related?: 44th Lunar and Planetary Science Conference, held March 18–22, 2013 in The Woodlands, Texas, LPI Contribution No. 1030
13. D. Ray, S. Misra, and **M. Arif** (2013b), Contrasting aerodynamic morphology and geochemistry of impact spherules from Lonar crater, India: some insights into their cooling history: 44th Lunar and Planetary Science Conference, held March 18–22, 2013 in The Woodlands, Texas, LPI Contribution No. 1031
14. **M. Arif**, N. Basavaiah, and S. Misra (2012), Rock- and palaeomagnetic properties of randomly oriented basaltic blocks from Lonar crater ejecta, India: European Planetary Science Congress (EPSC), held 23–28 September 2012 in Madrid, Spain (Vol. 7, EPSC2012-163)
15. **M. Arif**, N. Basavaiah, S. Misra, and K. Deenadayalan (2011a), Asteroid impact variations of NRM and REM of target basalts of Lonar crater, India: 74th Annual Meteoritical Society Meetings, held 08–12 August 2011 in London, UK (abstract #5248)
16. **M. Arif**, K. Deenadayalan, N. Basavaiah, and S. Misra (2011b), Variation of primary magnetization of basaltic target rocks due do asteroid impact: example from Lonar crater,

India: 42nd Lunar and Planetary Science Conference, held March 7–11, 2011 in The Woodlands, Texas, LPI Contribution No. 1383

17. **M. Arif**, S. Misra, N. Basavaiah (2010), Rock magnetic characterization of target basalts at Lonar crater, India: 41st Lunar and Planetary Science Conference, held March 1–5, 2010 in The Woodlands, Texas, LPI Contribution No. 1533, p. 1571
18. **M. Arif**, S. Misra, N. Basavaiah, and H. Newsom (2009), Distribution of impact-induced stress around Lonar crater, India: 72nd Annual Meteoritical Society Meetings, held 13–18 July 2009 in Nancy, France (abstract #5397)

Personal Information

Name	:	**Mohammad Arif**
Father's Name	:	Shri S. Mahaboob Saheb
Date of Birth	:	16-June-1984
Gender	:	Male
Marital Status	:	Married
Nationality	:	Indian
Religion	:	Islam
Languages known	:	English, Hindi and Telugu
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