Curriculum-Vitae

Anita Punia, PhD

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Gender: Female

Nationality: Indian

Research interest

- Mining pollution
- Environmental geochemistry
- Climate change
- Remote Sensing and GIS

Academic education

2014-2017	**Ph.D.** (Environmental Sciences), School of Environmental Sciences, Jawaharlal Nehru University, New Delhi.
2015-2017	**M.Sc.** (Distance Education) in Environmental Sciences from Bharathiar University securing 60.4%
2008-2010	**M.Sc.** (Water Resources Management) from TERI University, New Delhi securing CGPA 6.16
2004-2007	**B.Sc.** (Biotechnology, Chemistry and Zoology) from Kanoria Mahila Mahavidyalaya, Jaipur, University of Rajasthan securing 67.04 %

2002-2004	**Senior Secondary** from Board of Secondary Education, Rajasthan securing 68.62%
2001-2002	**High School** from Board of Secondary Education, Rajasthan securing 79.17%

Details of PhD

Title: **Abundance and Behaviour of Heavy Metals in the Khetri Copper Mine Environment, Rajasthan**

Name of Supervisor: **Dr. Neelam Siva Siddaiah**,

Associate Professor, School of Environmental Sciences, Jawaharlal Nehru University, New Delhi

Date of Joining: 27.07.2014

Date of Submission: 31.07.2017

Date of Viva-voice: 12.12.2017

Brief Summary: Systematic field and laboratory studies on the distribution and behavior of heavy metals in mine tailings, surface soils, ground water and vegetables from the Khetri copper mining region of Rajasthan were carried out to understand the impact of copper mining on the immediate environment. The salient findings are physiochemical characteristics of tailings; nature, mineralogy and geochemical makeup of soils; behavior of heavy metals in tailings and soils; quality and chemical composition of waters; heavy metal abundances in several types of vegetables; probable source(s) of various elements in both water and soils in addition to the status of heavy metal pollution in the environment of the region.

Work experience

02-2019 to 02-2022	Institute Postdoctoral Fellow at Department of Civil Engineering, Indian Institute of Technology, Guwahati

01-2019 to 02-2019	Guest faculty at Delhi Technological University, New Delhi. Taught Engineering geology, remote sensing and GIS.
01- 2011 to 02-2014	Worked as Assistant Director (Project) at International Academy of Environmental Sanitation & Public Health (Previously known as Sulabh International Academy of Environmental Sanitation & Public Health), Palam, New Delhi. Prepared proposals covering water and sanitation, training programmes on water, sanitation and hygiene (WASH), solid and liquid waste management etc for submission to Ministry of Drinking Water and Sanitation. Worked and handled pilot projects sponsored by WHO- India and played various roles such as surveys, data compilation and their analysis, organization of workshops, conducting training and other project related activities.
05-2010 to 09-2010	Worked at J.M. EnviroNet Pvt. Ltd., Gurgaon as an Environmental Scientist.

Publications

(4 manuscripts are communicated)

1. Anita Punia*, Rishikesh Bharti and Pankaj Kumar (2021) Hydrogeochemical processes governing uranium mobility: Inferences from the anthropogenically disturbed, semi-arid region of India. *Archives of Environmental Contamination and Toxicology*, **81**, 386-396 https://doi.org/10.1007/s00244-021-00879-3 (Springer, Impact factor: 3.4)
2. Anita Punia* (2021) Carbon dioxide sequestration by mines: Implications for climate change. *Climatic Change*, **165**, 10. https://doi.org/10.1007/s10584-021-03038-8 (Springer, Impact factor: 5.6)

3. Anita Punia* (2021) Role of temperature, wind and precipitation in heavy metal contamination at copper mines: A review. *Environmental Science and Pollution Research*, **28(4)**, 4056-4072. https://doi.org/10.1007/s11356-020-11580-8 (Springer, Impact factor: 4.2)

4. Anita Punia*, Rishikesh Bharti and Pankaj Kumar (2021) Impact of mine pit lake on metal mobility in groundwater. *Environmental Earth Sciences*, **80**, 245 https://doi.org/10.1007/s12665-021-09559-w (Springer, Impact factor: 2.9)

5. Anita Punia*, Rishikesh Bharti and Pankaj Kumar (2021) Provenance identification of soil at the confluence of Thar desert, Aravalli hills, and alluvial plain based on trace and rare earth elements geochemistry. *Arabian Journal of Geosciences*, **14(3)**, 201. https://doi.org/10.1007/s12517-021-06513-9 (Springer, Impact factor: 1.8)

6. Anita Punia*, Pawan Kumar Joshi and Neelam Siva Siddaiah (2021) Characterizing Khetri copper mine environment using geospatial tools. *SN Applied Sciences*, **3(2)**, 174. (Springer)

7. Pawan Kumar Joshi and Anita Punia* (2019) Thermal infra-red imaging to identify surface mines. *Mine Water and the Environment,* **38(3)**, 700-704. https://doi.org/10.1007/s10230-019-00631-3 (Springer, Impact factor: 3.2)

8. Anita Punia and Neelam Siva Siddaiah* (2019) Mobility and behaviour of heavy metals in copper mine tailings and neighboring soil at Khetri, India. *Mine Water and the Environment*, **38(2)**, 385-390. https://doi.org/10.1007/s10230-018-00582-1 (Springer, Impact factor: 3.2)

9. Anita Punia* (2019) Innovative and sustainable approach for phytoremediation of mine tailings: A Review. *Waste Disposal & Sustainable Energy*, **1**, 169-176. https://doi.org/10.1007/s42768-019-00022-y (Springer)

10. Anita Punia, Neelam Siva Siddaiah* and Saurabh Kumar Singh (2017) Source and assessment of heavy metal pollution at Khetri copper mine tailings and surrounding soil, Rajasthan, India. *Bulletin of Environmental Contamination and Toxicology*, **99**, 633-641. https://doi.org/10.1007/s00128-017-2175-6 (Springer, Impact factor: 1.8)

11. Anita Punia and Neelam Siva Siddaiah* (2017) Assessment of heavy metal contamination in groundwater of Khetri copper mine region, India and health risk assessment. *Asian Journal of Water Environment and Pollution*, **14(4)**, 9-19. 10.3233/AJW-170032 (IOS, Impact factor: 0.4)

12. Anita Punia* and Neelam Siva Siddaiah (2019) Impact of Aravalli ranges and Thar desert on the distribution of major oxides in the soils of Khetri copper mine region. *Journal of Applied Geochemistry*, **21(2)**, 269-275. (Geochemical Society of India)

13. Anita Punia and Neelam Siva Siddaiah* (2017) Accumulation and Distribution of Heavy Metals in Vegetables of Khetri Copper Mine Region, Rajasthan. *International Journal of Innovative Research in Science Engineering and Technology*, **6(6)**, 11725-11732.

Book Chapters

1. Anita Punia, Saurabh Kumar Singh and Rishikesh Bharti (2021) Source, assessment and remediation of heavy metals in groundwater. Groundwater Geochemistry: Pollution and Remediation Measures. Ed. Madhav S, Singh P. Wiley United Kingdom. pp. 79-104 (ISBN 9781119709695) https://doi.org/10.1002/9781119709732.ch5

2. Anita Punia and Saurabh Kumar Singh (2021) Contamination of water resources in mining region. Contamination of water: health risk assessment and treatment strategies. Ed. Ahamad A, Siddiqui S, Singh P. Elsevier, USA. pp. 3-17 (ISBN 9780128240588) https://doi.org/10.1016/B978-0-12-824058-8.00015-3

3. Anita Punia, Saurabh Kumar Singh and Rishikesh Bharti (2022) Effect of climate change on urban water availability and its remediation in different continents. Urban water crisis and management. Ed. Arun Lal Srivastav AL, Madhav S., Bhardwaj AK, Valsami-Jones E. Elsevier, USA. (ISBN 9780323918381)

Conference proceedings

1. Anita Punia*, Neelam Siva Siddaiah, Rishikesh Bharti (2019) Groundwater Quality and Hydrogeochemical Characterization of Khetri Copper Mining Region, India. 16th International Conference on Environmental Science and Technology Rhodes, Greece, 4 to 7 September 2019. ASTI Book Series (indexed in Scopus).
2. Anita Punia*, Rishikesh Bharti and Pawan Kumar Joshi (2022) Satellite imagery band ratio for mapping the open pit mines: A preliminary study. EGU General Assembly 2022, Vienna, Austria, 23–27 May 2022, EGU22-8296, https://doi.org/10.5194/egusphere-egu22-8296, 2022

Papers presented at conferences

1. Anita Punia and Rishikesh Bharti (2021) Impact of different mines on soil and water quality: a comparative study from the semi-arid region of north-western India. AGU fall meeting, New Orleans, USA, 13-17th December, 2021
2. Anita Punia, Rishikesh Bharti and Neelam Siva Siddaiah (2019) Characterisation and evaluation of groundwater resources of Khetri copper mining region, India. VIII International Groundwater Conference(IGWC-2019). October, 21-24 2019 at Department of Hydrology, IIT Roorkee, Roorkee, India **(Oral)**
3. Anita Punia and Neelam Siva Siddaiah (2017) "Copper: From Ore to Environment at Khetri, Rajasthan". National Conference on Environmental Pollutants: Impact Assessment and Remediation (NCEPIAR), School of Environmental Sciences, Jawaharlal Nehru University, New Delhi, 29th March, 2017 **(Oral)**
4. Anita Punia and Neelam Siva Siddaiah (2017) "Accumulation and distribution of heavy metals in vegetables of Khetri copper mine region, Rajasthan". National Seminar on Recent Advances in Environmental Toxicology, Department of Biosciences, Jamia Millia Islamia New Delhi, 13-14th February, 2017 **(Oral)**
5. Anita Punia and Neelam Siva Siddaiah (2016) "Toxicity of copper tailings over a time period: A case study form Khetri, Rajasthan". International Conference on

Strategies for Environmental Protection and Management, JNU, New Delhi, 11-13th December, 2016 **(Poster)**

6. Anita Punia and Neelam Siva Siddaiah (2016) "Abandoned mines and their environmental risk: A case study from Khetri, Rajasthan". National Conference on Environmental Pollutants: Impact Assessment and Remediation (NCEPIAR), JNU, New Delhi, 18-19th March, 2016 **(Poster)**
7. Anita Punia, Neelam Siva Siddaiah and Saurabh Kumar Singh (2015) "Geochemistry and grain size distribution of copper mine tailings, Khetri Rajasthan and its impact". National Seminar on Past and Present Geochemical Processes Impacts of Climate Change, Jawaharlal Nehru University, New Delhi, 22-23rd December, 2015 **(Poster)**
8. Anil Kumar Lohani, Ashoke Bashishtha and Anita Punia (2009) Trend Analysis of Meterological Data-A Case Study. National Symposium on Climate Change and Water Resources in India (CCWRIN), 18-19 November 2009 at Roorkee **(Poster)**

Awards and Achievements

1. Received **UGC-CSIR JRF** (Junior Research Fellowship) grant from University Grants Commission (UGC) in Earth, Atmospheric, Ocean and Planetary Sciences, during the time period of 01.01.2015 to 31.12.2016. The junior research fellowship (JRF) is awarded to the research scholar who qualify in the National Eligibility Test-Junior Research Fellowship (NET-JRF) conducted by the UGC and the UGC-Council of Scientific and Industrial Research (UGC-CSIR) joint test.
2. Received **UGC-CSIR SRF** (Senior Research Fellowship) grant from University Grants Commission (UGC) in Earth, Atmospheric, Ocean and Planetary Sciences, during the time period of 01.01.2016 to 12.12.2017.
3. Qualified UGC-NET in Environmental Sciences of December, 2013 and June, 2014
4. Qualified CSIR-UGC NET in Earth, Atmospheric, Ocean and Planetary Sciences of December, 2013

5. Qualified CSIR-UGC JRF in Earth, Atmospheric, Ocean and Planetary Sciences of June, 2014 (Availed)
6. Best poster in National Conference on Environmental Pollutants: Impact Assessment and Remediation (NCEPIAR), School of Environmental Sciences, JNU, New Delhi, 18-19th March, 2016
7. Awarded Young Scientist International travel grant by Science and Engineering Research Board, Government of India to present the research work at the international conference.
8. Received "*Gargi*" award from Government of Rajasthan during 2003 and 2004. The "*Gargi*" award is awarded to meritorious girls in the state of Rajasthan. The award money is given to girls those secured above 75% marks in the 10th and 12th examination conducted by the Board of Secondary Education, Rajasthan.

Academic duties

- Taught laboratory and course (Engineering Geology and Advanced Techniques in Geoscience) classes of M.Tech. and B.Tech (Earth Sciences branch)
- Conducted examination duties as assigned by the Department of Civil Engineering, IIT Guwahati for Mid and End Semester Exams for the year 2019.

Training programs

11-12-2017 22-12-2017	to	GIAN (Global Initiative For Academic Network) course on "Dendrecology: Application of Tree-Ring Analysis to Ecological Science".
01/2010 05/2010	to	Four months major project on "Adsorption properties of red mud and bagasse fly ash" at The Energy and Resources Institute (TERI), New Delhi

24-05-2009 25-07-2009	to	Two months minor project on "Trend analysis of Meteorological Data- A case study" by using Kendall, Mann Kendall and S-Rho models at National Institute of Hydrology (NIH), Roorkee.
8-10-2012 10-10-2012	to	Training programme on "Social Impact Assessment" organized by Centre for Science and Environment (CSE), New Delhi

Hands on Software

- ArcGIS
- R
- SigmaPlot
- Grapher
- ENVI
- ERDAS
- SPSS
- Aquachem
- X'pert highscore
- Corel Draw

Memberships

- Life member of Indian Society of Applied Geochemists (ISAG) (Member ID 589)
- Member of European Association of Geochemistry, France (Member ID 2019-0173)
- Introductory student member of Geochemical Society, Washington (Member ID 208131)

Extra-Curricular activities/Workshops

- Participated in online workshop "Scanning Electron Microscopy: Technique ad its Application" on 29-30th July, 2021 organised by North East Centre for Biological Sciences and Healthcare Engineering and Indian Institute of Technology, Guwahati.
- Participated in "Emerging areas of research in Quaternary Science" from 7th September to 25th October, 2020

- Participated in "3-day International E-workshop on Advanced Micropaleontology" from 25-27th, August 2020
- Participated in "International Webinar on Himalayan Biodiversity" on 8th August, 2020
- Participated in "Approaching the contagious diseases from a Geospatial perspective" on 26-27th, August 2020
- Participated in "Emerging scenarios related to Zoonoses in warming environment" from 19-20th, August 2020
- Participated in "National webinar on weather & climate services: self-reliant India and waste to wealth-way forward: self-reliant India" on 18th October, 2020
- Participated in the Naipunya Workshop for researchers on 23rd February, 2017.
- Participated in National Science Day (2017) held on 28th February, 2017 at Convention Centre, Jawaharlal Nehru University, New Delhi.
- Participated in Yoga Workshop from 17th to 20th June, 2016 and in the International Day of Yoga on 21st June, 2016.
- Volunteered in conference Tropical Ecology congress: Tropical Ecosystems in a changing World, held during 10-12th December, 2014 at School of Environmental Sciences, Jawaharlal Nehru University, New Delhi.
- Won 3rd prize at HDJ Ram Shishu Sadan Senior Secondary School, Pilani, Rajasthan in "Bhartiya Sanskriti Gyaan Pariksha, 2001" organized by International Gayatri Parivaar, Haridwar.
- Raised funds for the purpose of the education and other programme for needy girl child organized by the "Help Care Society", New Delhi, 1997 at School JLNCA, Pilani, Rajasthan.

References

1. Dr. Neelam Siva Siddaiah
   (PhD supervisor)
   Associate Professor (Retired)
   School of Environmental Sciences,
   Jawaharlal Nehru University, New Delhi
   Email ID: nssiddaiah@gmail.com

2. Dr. Rishikesh Bharti
   (Postdoc mentor)
   Assistant Professor
   Department of Civil Engineering
   IIT Guwahati – 781039
   Email ID: rbharti@iitg.ac.in

3. Prof. Pawan Kumar Joshi
   Professor
   School of Environmental Sciences,
   Jawaharlal Nehru University, New Delhi
   Email ID: pkjoshi@mail.jnu.ac.in pkjoshi27@hotmail.com

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