

# *Dr.Raju Sarkar*

**PROFESSIONAL QUALIFICATION :** B.E. (Civil), M.E. (Soil Mechanics & Foundation Engineering)  
Ph.D. (Geotechnical Engineering)

**VISITING SCHOLAR/ RESEARCHER :** University of Nottingham, United Kingdom

## **RESEARCH INTEREST :**

- 1) **Environmental Geotechnology:** Utilization of Industrial Solid Waste in Geotechnical Application, Ash Utilization, Ground Improvement Technique, Numerical Modeling
- 2) **Transportation Geotechnology:** Road Sub-grade Soil Behaviour, Pavement Foundations, Numerical Modeling, Granular Materials for Road Construction
- 3) **Soil-Structure Interaction:** Slope Stability for Foundation, Numerical Modeling

## **ACADEMIC PROFILE :**

<b>Degree Name</b>	<b>University Name</b>	<b>City Name</b>	<b>Country</b>
Bachelor of Engineering (Civil Engineering.)	Gauhati University	Guwahati	India
Master of Engineering (Soil Mech. & Foundation Engineering)	Gauhati University	Guwahati	India
PhD (Geotechnical Engineering)	Jamia Millia Islamia (Central University, Govt. of India)	New Delhi	India
Visiting Scholar	University of Nottingham	Nottingham	United Kingdom

## **PATENT FILLED/PUBLISHED :**

- 1) “Soil based brick mixed with lime mud - an industrial waste of paper mill”  
  
Application No.: 2669/DEL/2014  
International classification: C04B28/20  
Journal No.: 21/2015  
Date of Publication: 22/05/2015
- 2) “Steel sludge based brick mixed with Brahmaputra sand, flyash, lime mud and binder”  
  
Application No.: 1853/DEL/2015  
International classification: B22D41/32  
Journal No.: 34/2015  
Date of Publication: 21/08/2015

## **THESIS SUPERVISED :**

### **PhD**

- 1) Papiya Mandal – “Study of Trace Gases and Aerosols in Mixed Used Area of Delhi” – Submitted (Co-supervisor- Prof. Anubha Mandal)
- 2) Ankur Mudgal – “A Study on Engineering Behaviour of Geotextile Reinforced Soft Soil” – Ongoing

### **M. Tech**

- 1) Sanket Katyar – “Geotechnical Behaviour of Randomly Oriented Fiber Reinforced Pond Ashes for Road Construction” (2011)
- 2) Prateek Negi – “Study of Geotechnical Behaviour of Pond Ash Mixed With Marble Dust and Lime” (2012)
- 3) Ankur Mudgal – “Stabilization of Black Cotton Soil with Lime and Stone Dust” (2012) (Co-supervisor – Prof. A.K. Sahu)
- 4) Shivendra Kushwaha – “Comparative Study of Hair Reinforced Pond Ash with Lime and Soil” (2013)
- 5) Ashish Kumar Kashyap – “Parametric Study of Stability of Embankments” (2014)
- 6) Deepak Dhiman – “Comparative Study of Stabilization of Expansive Soil Using Jute Fibre and Polypropylene Fibre” (2014)
- 7) Rohit Ralli – “Comparative Study of Stabilization of Expansive Soil Using Microsilica and Rice Husk Ash” (2014) (Co-supervisor – Prof. A.K. Gupta)
- 8) Partha Pratim Das – “Utilization and Application of Steel Sludge Waste” (2015) (Co-supervisor – Dr. A. Bharti)
- 9) Anshul Rathore – “Effect of Geotextile on Shear Strength of Yamuna Sand” (2015)
- 10) Lalan Kumar Paswan – “Load Carrying Capacity of Reinforced Pond Ash Beds” (2015)
- 11) Deepak Rana – “Study of Shear Behaviour of Yamuna Sand Blended With Soft Soil” (2016)
- 12) Mohit Chandra – “Numerical Modeling on Slope Stability” (2016)
- 13) Ankit Soni – “Study of Shear Behaviour of Yamuna Sand Blended With Lime” (2016)

## **RESEARCH PAPERS AND PUBLICATIONS :**

### **International Journals**

- 1) **Sarkar, R.** (2005), “Landslides and Debris Flows: A Case Study of Uttarkashi”, Journal of Nepal Geological Society, Vol-32 (Sp. Issue), pp 71-76.
- 2) **Sarkar, R.** (2007), “Resettlement and Post Earthquake Reconstruction”, Journal, CIVILICA, Vol.-Urban & Regional Planning, 1386, pp 234-238.
- 3) **Sarkar, R.** (2008), “Post Earthquake Debris Management”, Journal, Advances in Geosciences, Vol. 09, pp. 53-64.

- 4) **Sarkar, R.**, Abbas, S.M., and Shahu, J.T. (2011), "Geotechnical Characterizations of Pond Ash Available in National Capital Region – Delhi", *International Journal of Earth Sciences & Engineering* Vol. 04, No. 06, (Sp. Issue), pp. 138-142.
- 5) **Sarkar, R.**, Abbas, S.M., and Shahu, J.T. (2011), "Geotechnical Behavior of Randomly Oriented Fiber Reinforced Pond Ashes Available in Delhi Region" *International Journal of Earth Sciences & Engineering (IJEE)*, Vol. 05, No. 01, pp. 44-50
- 6) **Sarkar, R.**, Abbas, S.M., and Shahu, J.T. (2012), "Study of Geotechnical Behaviour of Pond Ash Mixed with Marble Dust", *International Journal of Advanced Technology in Civil Engineering (IJATCE)*, Vol. 01, No. 02, pp. 99-106
- 7) **Sarkar, R.**, Abbas, S.M., and Shahu, J.T. (2012), "A Comparative Study of Geotechnical Behavior of Lime Stabilized Pond Ashes from Delhi Region", *International Journal of GEOMATE*, Vol. 03, No. 01, Sl. No. 05, pp. 273-279
- 8) Negi, P. and **Sarkar, R.** (2013), "Effect of Curing on Compaction Behavior of Pond Ash Mixed with Marble Dust and Lime" *International Journal of Earth Sciences & Engineering (IJEE)*, Vol. 06, No. 01, pp. 211-216
- 9) Mandal, P., **Sarkar, R.**, Saud, T., Mandal, A., Sharma, S.K. and Mandal, T.K (2013), "High Seasonal Variation of Atmospheric C and Particle Concentrations in Delhi, India", *Environmental Chemistry Letters*, Vol. 11, No. 43, Springer
- 10) Mudgal, A., Negi, P. and **Sarkar, R.** (2013), "Utilization of Fly Ash Mixed With Lime in Pavement Sub-Base", *International Journal of Civil Engineering and Applications (IJCEA)*, Vol. 3, No. 02, pp. 22-25
- 11) Mudgal, A. **Sarkar, R.** and Sahu, A.K., (2014), "Effect of Lime and Stone Dust in the Geotechnical Properties of Black Cotton Soil", *International Journal of GEOMATE, Japan*, Vol. 07, No. 02, Sl. No. 14, pp. 1033-1039
- 12) Mandal, P., **Sarkar, R.**, Saud, T., and Mandal (2014), "Seasonal Variation and Sources of Aerosol Pollution in Delhi, India" *Environmental Chemistry Letters*, Vol. 13, No. 32, Springer
- 13) **Sarkar, R.**, Daalia, A., Narang, K., Garg, S., Agarwal, P. and Mudgal, A. (2015), "Cost Effectiveness of Flexible Pavement on Stabilised Expansive Soils", *International Journal of GEOMATE*, Vol. 10, No. 01, Sl. No. 19, pp. 1595-1599
- 14) **Sarkar, R.** and Dawson, A.R. (2015), "Economic Assessment of Use of Pond Ash in Pavements", *International Journal of Pavement Engineering*, DOI:10.1080/10298436.2015.1095915, Taylor & Francis

### **International Proceedings**

- 1) **Sarkar, R.** (1997), "Concept of Eco-development for Rural Housing in North-East India", *International Conference on Civil Engineering for Sustainable Development*, Roorkee, India, pp. 546-549.
- 2) **Sarkar, R.** (2003), "Strategies for Sustainable Development of Hilly Regions Through Environmental Conscious Planning", *International Civil Engineering Conference on Sustainable Development in the 21st Century*, Nairobi, Kenya, pp. 789-793
- 3) **Sarkar, R.** (2004), "Housing Construction and Post Earthquake Resettlement", 5<sup>th</sup> Asian Seismological Commission General Assembly *International Symposium on Seismic Hazard Evaluation and Risk Reduction*, Yerevan, Armenia, pp.234-239
- 4) **Sarkar, R.** (2004), "Uttarkashi Landslides - A Case Study", *Hazards 2004 Conference (10<sup>th</sup> International Symposium on Natural and Human Induced Hazards and 3rd Workshop of the IUGG Commission on Geophysical Risk and Sustainability)*, Hyderabad, India, pp. 651-655.

- 5) **Sarkar, R.** (2005), “Post-Earthquake Reconstruction - In context of Housing”, 2<sup>nd</sup> AOGS (Asia Oceania Geosciences Society) Annual Meeting, Singapore, pp. 231-236.
- 6) **Sarkar, R.** (2005), “Housing and Post Earthquake Rebuilding Responses”, 1<sup>st</sup> Bangladesh Earthquake Society International Symposium, Dhaka, Bangladesh, pp. 455-459.
- 7) **Sarkar, R.** (2006), “Post-Earthquake Housing Construction Using Low Cost Building Materials”, 4<sup>th</sup> International Conference on Earthquake Engineering, Taipei, Taiwan, pp. 275-281.
- 8) **Sarkar, R.** (2006), “Sustainable Development and Post Earthquake Reconstruction”, 13<sup>th</sup> Symposium on Earthquake Engineering, Roorkee, India, pp. 811-815.
- 9) Singh, G., Jain, A., Bhatia, M., Gupta, S., Gandhi, A., **Sarkar, R.** (2008), “Fly Ash and Its Safety Aspects - An Overview” 9<sup>th</sup> International Symposium on Environmental Geotechnology and Global Sustainable Development, Hong Kong, pp. 685-489.
- 10) **Sarkar, R.** (2010), “Low Cost Building Materials and Earthquake Prone North East India”, 3<sup>rd</sup> Bangladesh Earthquake Society International Symposium, Dhaka, Bangladesh, pp. 96-103.
- 11) Verma, A., Saxena, M., Garg, A., Khanna, N., Sharma, P., **Sarkar, R.** (2010), “Pond Ash as a Landfill Liner”, 6<sup>th</sup> International Congress on Environmental Geotechnics, Delhi, India, pp. 349-353.
- 12) **Sarkar, R.**, Abbas, S.M., and Shahu, J.T. (2011), “Study of Geotechnical Behaviour of Pond Ash When Mixed with Bentonite” International Conference on Geotechnics for Sustainable Development – Geotec Hanoi 2011 (ISBN 978-604-82-000-8), Hanoi, Vietnam, pp. 647-652
- 13) **Sarkar, R.**, Narang, K, Adhikari, S., Chauhan, S., Diksha and Adhikari, B. (2016), “Retrofitting of a Building Damaged by 2015 Nepal Earthquake”, International Conference on Earthquake Engineering and Post Disaster Reconstruction Planning (ISSN 2505-0737), Bhaktapur, Nepal, pp. 278-285

### **National Proceedings**

- 1) **Sarkar, R.**, Mudgal, A., Bhaskar, S., Gupta, V. and Kurar, K. (2016), “A review on study on effect of various admixtures on geotechnical properties of expansive soils”, National Conference on Technical Advancements in Civil Engineering (ISBN 978-93-85777-52-3), Phagwara, Punjab, pp. 136-152
- 2) **Sarkar, R.**, Diksha, Mishra, D. and Mudgal, A. (2016), “A review on recycling of construction and demolition waste”, National Conference on Technical Advancements in Civil Engineering (ISBN 978-93-85777-52-3), Phagwara, Punjab, pp. 126-135
- 3) **Sarkar, R.**, Das, A., Bajaj, A., Mahajan, A. and Mudgal, A. (2016), “Modelling of MDD and OMC Using Artificial Neural Network”, National Conference on Advances in Geotechnical Engineering (ISBN 978-93-85777-60-8), Aligarh, Uttar Pradesh, pp. 151-155

### **BOOK PUBLICATION :**

- 1) Worked as Preparatory in the SI version of the book “**Traffic and Highway Engineering**” authored by **Prof. N. J. Garber and Prof. L.A. Hoel of University of Virginia, USA** for Cengage Learning, **USA**.

## **ACADEMIC ACHIEVEMENTS :**

- 1) Awarded **NPEEE** (National Programme on Earthquake Engineering Education, A Ministry of HRD, Govt. of India initiative) International Travel Support for participating in the ‘2<sup>nd</sup> AOGS (Asia Oceania Geosciences Society) Annual Meeting’ held in **Singapore** from 20<sup>th</sup> June to 24<sup>th</sup> June 2005.
- 2) Awarded **NPEEE** (National Programme on Earthquake Engineering Education, A Ministry of HRD, Govt. of India initiative) International Travel Support for participating in the ‘6<sup>th</sup> Asian Seismological Commission General Assembly International Symposium’ held in Bangkok, **Thailand** from 07<sup>th</sup> November to 10<sup>th</sup> November 2006.
- 3) Awarded **Local Organising Committee** (Bangladesh University of Engineering and Technology, Dhaka) Travel Grant for participation in the ‘3<sup>rd</sup> Bangladesh Earthquake Society International Symposium’ held in Dhaka, **Bangladesh** from 05<sup>th</sup> March to 06<sup>th</sup> March 2010.
- 4) Awarded **IUGG** (International Union of Geodesy and Geophysics) International Travel Grant for participating in the in the ‘XXV<sup>th</sup> International Union of Geodesy and Geophysics General Assembly’ held in Melbourne, **Australia** from 28<sup>th</sup> June to 7<sup>th</sup> July 2011.
- 5) Awarded **DST** (Department of Science and Technology, Govt. of India) Foreign Travel Grant for participating in the ‘XI<sup>th</sup> International Conference on Protection and Restoration of the Environment’ held in Thessaloniki, **Greece** from 03<sup>rd</sup> July to 06<sup>th</sup> July 2012.
- 6) Awarded **INSA** (Indian National Science Academy) Travel Support for participating in the ‘IAHS-IAPSO-IASPEI Joint Assembly 2013’ held in Gothenburg, **Sweden** from 22<sup>nd</sup> July to 26<sup>th</sup> July 2013.
- 7) Received nomination from **Ministry of Home Affairs, Govt. of India**, to represent India in ‘SAARC Regional Training Programme on Techniques for Earthquake Resistant Design & Retrofitting in South Asia’ held in IIT-Roorkee from 19<sup>th</sup> March to 30<sup>th</sup> March 2014.
- 8) Awarded **IUGG** (International Union of Geodesy and Geophysics) International Travel Grant for participating in the in the ‘XXVI<sup>th</sup> International Union of Geodesy and Geophysics General Assembly’ held in Prague, **Czech Republic** from 22<sup>nd</sup> June to 02<sup>nd</sup> July 2015.
- 9) Awarded National Merit Scholarship
- 10) Awarded State Merit Scholarship

## **MEMBERSHIP OF PROFESSIONAL BODIES :**

- 1) American Society of Civil Engineers (ASCE)
- 2) International Society of Environmental Geotechnology (ISEG)
- 3) Asia Oceania Geosciences Society (AOGS)
- 4) Indian Society of Geotechnical Engineering (ISGE)

**DETAILS OF SPONSORED RESEARCH PROJECT :**

Sl. No.	Title of the Research Project	Agency	Amount (Lakhs)	Whether PI/Co PI	Co-Investigator if any	Status
01	Study on Residual Effects on Soil and Groundwater Quality at Different Soil Strata (0.5m & 1.0m) in and around 3 km radius of Dumping Site at Boragaon-Deepar Beel	Ministry of Environment & Forests	7.62	Principal Investigator	a) Dr. A. Haritash b) Ms. P. Mandal (NEERI-CSIR)	Awarded
02	Improvement of Trafficability of Various Army Transportation Vehicles on Off-terrain Condition	DRDO	49.98	Principal Investigator	a) Dr. G. Kumar b) Dr. R. Birok	Result Awaited
03	Seasonal Variation of Particulate Matter, Elemental and Organic Carbon in and Around Fly Ash Pond Available in NCR Delhi	DST	24.8	Principal Investigator	a) Prof. A. Trivedi b) Ms. P. Mandal (NEERI-CSIR)	Result Awaited
04	Study on Utilization of Solid Waste (Lime Mud) Dumped Outside the Mill Campus of M/S HPCL (Nagaon Paper Mill), Jagiroad, Dist. Morigaon, Assam	Pollution Control Board, Assam (Govt. of Assam)	15.0	Principal Investigator	a) Prof. A. K. Gupta	Completed

**DETAILS OF CONSULTANCY PROJECT :**

Sl. No.	Title of Project	Whether completed/ in progress	Duration	Amount (Lakhs)	Sponsoring Agency	Co-Investigator if any
01	Material Testing and Quality Assurance Work of Barapullah Elevated Road from Sarai Kale Khan to Jawahar Lal Nehru Stadium	Completed	03 yrs.	129.0	PWD (Govt. of Delhi)	Shri Susheel Kumar, Prof. S. K. Singh, Prof. A. K. Gupta
02	Material Testing and Quality Assurance Work of U.P. Link Road Project	Completed	2 yrs	72.6	PWD (Govt. of Delhi)	Shri Susheel Kumar, Prof. S. K. Singh, Prof. A. K. Gupta
03	Material Testing and Quality Assurance Work Apsara Border Flyover Project	Completed	2 yrs	84.0	PWD (Govt. of Delhi)	Shri Susheel Kumar, Prof. S. K. Singh, Prof. A. K. Gupta
04	Soil and Fly Ash Testing for widening to 8 lanes and strengthening of NH 24	Completed	01 month	0.23	PWD (Govt. of Delhi)	Shri. Sushil Kumar
05	Material Testing and Quality Assurance Work of i) Construction of RMC road and side drains in Z-Block of Prem Nagar-II, ii) Construction of RMC road and SW drain of Gali No. 13-33 in Baljit Vihar, iii) Construction of RMC road and SW drain of Gali No. 1-61 Pratap Vihar-III in Kirari Assembly Constituency	Completed	01 year	7.48	I&FC (Govt. of Delhi)	Prof. A.K. Gupta
06	Material Testing and Quality Assurance Services for the work of Construction of four lane road from Auchandi border to Mangolpur Kalan.	In Progress	2 years	50.00	PWD (Govt. of Delhi)	Prof. K.C. Tiwari Shri B.R.G. Robert Shri K. Aryan

## **WORKSHOP/CONFERENCE ORGANIZED :**

- 1) Coordinator - Faculty Development Programme on “Recent Trends in Geoenvironmental Engineering” organized by Civil Engineering Department at DTU during April 18-22, 2016  
(Sponsored by: TEQIP-II, Amount: INR 250,000)
- 2) Coordinator - SAARC Regional Workshop on “Application of Science and Technology in Earthquake Risk Mitigation for Urban Agglomerate in South Asia” organized by SAARC Disaster Management Centre (SDMC) in collaboration with Delhi Technological University (DTU) held on 24-25 May 2013 at New Delhi, INDIA  
(Sponsored by : SDMC, Amount : US\$22,000)
- 3) Organizing Secretary - First National Conference on “Innovations in Engineering: Innovations Conclave 2010” organized by Civil Engineering Department at DTU during Nov. 01-02, 2010  
(Sponsored by : Industry, Amount INR 250,000)
- 4) Co-Coordinator - International Workshop on “Climate Change and Water Resources in South Asia” organized by Civil Engineering Department of DTU in collaboration with Columbia University during Aug. 08-10, 2009 at DTU, Delhi
- 5) Member, Organizing Committee - ITS Conference and Exhibition 2009 on “ITS Mobility & Safety Management” organized by ITS India and supported by DTU at DTU during Dec. 01-02, 2009