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EDUCATION

- **PhD (Geotechnical Engineering), National Institute of Technology Warangal, Telangana, India** [Dec 2018- Oct 2023]
  Dissertation: *Effect of Post-Compaction Moisture Variation in Unsaturated Stabilized Subgrade Soils*
  Advisors: Prof. M. Heeralal, Department of Civil Engineering, NIT Warangal, India
  Prof. T. Thyagaraj, Department of Civil Engineering, IIT Madras, India
  The reaction kinetics and durability of calcium carbide slag-stabilized clayey soil were assessed relative to the performance of hydrated lime-stabilized clay. The effect of post-compaction moisture variation in pozzolanic clay stabilized using calcium-based additives cured under controlled conditions for up to 360 days was studied. The strength and stiffness of stabilized soils, as well as micro-level modifications, were studied through SEM-EDS, XRD, TGA, and FTIR. The effect of natural carbonation in stabilized soils was corroborated to assess its influence on mechanical properties. The findings showed that carbide slag-stabilized clay showed a slow rate of strength gains up to 28 days compared to the strength of lime-stabilized clay, which is attributed to the low solubility product value of calcium in carbide slag. However, the slag-stabilized samples exhibited higher resistance to cyclic moisture variation (i.e., wetting-drying) and calcium leaching than lime-stabilized clay. The use of carbide slag as soil stabilizer for construction of low volume and unpaved roads were found to be economical and environmentally friendly through a detailed life cycle analysis.

- **M.E. (Geotechnical Engineering**), **Government College of Technology Coimbatore, Tamil Nadu, India** (Percentage: 89%) [June 2016]
  Thesis: *Efficacy of Sugarcane Bagasse Ash as pozzolanic material for Soil Improvement.*

- **B.E. (Civil Engineering), Sona College of Technology, Anna University, Tamil Nadu, India** (Percentage: 87%) [May 2014]

PROFESSIONAL EXPERIENCE

Indian Institute of Technology Bombay, Maharashtra, India **[Nov 2023- Present]**

Institute Post-Doctoral Research Fellow

Project: Durability of air-lime binder with organic additives.

Key activities:

- Quantifying carbon uptake potential of lime mortar for revival of heritage mortars
- Durability against accelerated salt weathering

National Institute of Technology Warangal, Telangana, India [Dec 2018- Oct 2023]

Teaching Assistant

- Post-Graduate Experimental Geo-Technique Laboratory
- Post-Graduate Geo-environmental course
- Project proposal and research grant preparation
- Supervised Undergraduate Project -02

Graduate Projects Supervision

- Moisture susceptibility of clay stabilized with pumice ash, 2019
- Rut resistance analysis and Numerical simulation of Wheel Tracking Test for stabilized clay using Plaxis®3D, 2022 (*Outcome:* 1 SCI publication)
- Modelling Soil- Water Characteristic Curve using Artificial Neural Network, 2021, (*Outcome:* 1 SCOPUS indexed Book chapter)
- Sandy soil improvement using Microbially Induced Calcite Precipitation technique, 2023
- Accelerated Carbonation for Clay Stabilization using Calcium Carbide Residue, ***Ongoing***

Journal Papers in Peer-reviewed Journals

Papers Submitted/Under review

JP13: Sharanya, A. G., Mudavath, H., & Thyagaraj, T. (2024) Probabilistic approach to identify the representative rut curve for a clay stabilized with calcium-based additives. *International Journal of Pavement Engineering* **(Under review) Q2**

JP12: Lakshay Tyagi, **Sharanya, A.G.,** M.Heeralal, Sanjit Biswas (2024) Seismic Performance Evaluation of Geocell Retaining Walls: based on Shake Table Testing and Numerical Modeling, *International Journal of Geosynthetics and Ground Engineering* **(Under review) Q2**

Published

JP11: Sharanya, A. G., Mudavath, H. & Vaddemani, G.P.R. Evaluating the sustainability of using calcium carbide residue for clay stabilization: integrating mechanical behaviour and life cycle assessment. *Environ Sci Pollut Res* (2025). https://doi.org/10.1007/s11356-025-36608-9 **Q1**

JP10: A.G. Sharanya, V.S. Athira, Swathy Manohar, Insights into the role of cane sugar on the strength, microstructure, and durability of air lime mortar, Construction and Building Materials, Volume 463, 2025, https://doi.org/10.1016/j.conbuildmat.2025.140152 **(SCI) Q1**

JP9: Sharanya, A. G., Mogili, S., Heeralal, M., & Thyagaraj, T. (2024). Effect of Calcium Carbide Residue on Shrinkage Mechanism of Clayey Subgrade Soil. *Communications in Soil Science and Plant Analysis*. *55*(21), Pp 3221-3235 https://doi.org/10.1080/00103624.2024.2387141 **(SCIE) Q2**

JP8: Sheik, A.G., Kumar, A., **Sharanya, A.G.** *et al.* Machine learning-based monitoring and design of managed aquifer rechargers for sustainable groundwater management: scope and challenges. *Environmental Science and Pollution Research* (2024). https://doi.org/10.1007/s11356-024-35529-3 (**SCOPUS) Q1**

JP7: Athira V.S., Sreedevi, T., **Sharanya, A. G.,** Abishekh, T., & Swathy, M. (2024) Potential application of bio-admixtures in synthesizing traditional lime binders- A comprehensive review. *Journal of Building Engineering* Volume 90 https://doi.org/10.1016/j.jobe.2024.109464. **(SCI) Q1**

JP6: V. Guru Prathap Reddy, U. Rishivarun, T. Tadepalli, R.K. Pancharthi, **Sharanya, A. G.** (2023) Design of concrete colour reference charts for monitoring of deterioration in concrete structures, *Journal of The Institution of Engineers (India): Series A (IEIA).* Volume 105, pages 61–75**.** https://doi.org/10.1007/s40030-024-00782-9 **(SCOPUS) Q2**

JP5: Sharanya, A.G., Thyagaraj, T. & Heeralal, M. Influence of Carbide Slag Stabilization on the Short-Term and Long-Term Resilient Modulus of Clayey Subgrade. *Int. J. Pavement Res. Technol.* (2023). https://doi.org/10.1007/s42947-023-00392-x **(SCOPUS) Q2**

JP4: Sharanya, A. G., Mudavath, H., & Thyagaraj, T. (2023) Long-term Strength Evolution of Calcium Carbide Residue-treated Clay soil, *Chinese Journal of Geotechnical Engineering, Volume 43 Issue 6, 11-29* https://doi.org/10.11779/CJGE2023.6.2 **(SCOPUS) Q2**

JP3: Sharanya, A. G., Mani Krishna, S., & Mudavath, H. (2023). Finite Element Simulation of Rutting in Calcium Carbide Residue-Stabilized Expansive Subgrade. *Arabian Journal for Science and Engineering*.Volume 48, pages 12875–12889. https://doi.org/10.1007/s13369-022-07595-7 **(SCI) Q1**

JP2: Sharanya, A. G., Mudavath, H., & Thyagaraj, T. (2021). Soil Shrinkage Characterization of Low Plasticity Soil Using Digital Image Analysis Process. *Transactions A: Basics-International Journal of Engineering*, *34*(10), 2206–2212. https://doi.org/10.5829/ije.2021.34.10a.02 **(SCOPUS) Q2**

JP1: Sharanya, A.G., Mudavath, H. & Thyagaraj, T. Review of methods for predicting soil volume change induced by shrinkage. *Innov. Infrastruct. Solut.* 6, 116 (2021). https://doi.org/10.1007/s41062-021-00485-1 **(SCOPUS) Q2**

Conference Book Chapters

BC4: Sharanya, A.G., Heeralal, M., Thyagaraj, T. (2022). "Modelling Soil Water Retention Curve for Cohesive Soil Using Artificial Neural Network." In: Muthukkumaran, K., Jakka, R.S., Parthasarathy, C.R., Soundara, B. (eds) Soil Behavior and Characterization of Geomaterials. Indian Geotechnical Conference 2021. Lecture Notes in Civil Engineering, vol 296. Springer, Singapore. https://doi.org/10.1007/978-981-19-6513-5_31 **(SCOPUS) (A)**

BC3: Sharanya, A.G., Heeralal, M., Thyagaraj, T. (2021). "Evaluating Soil Shrinkage Behavior Using Digital Image Analysis Process." In: Satyanarayana Reddy, C.N.V., Muthukkumaran, K., Satyam, N., Vaidya, R. (eds) Ground Characterization and Foundations. Indian Geotechnical Conference 2020. Lecture Notes in Civil Engineering, vol 167. Springer, Singapore. https://doi.org/10.1007/978-981-16-3383-6_7 **(SCOPUS) (A)**

BC2: Sharanya, A.G., Heeralal, M., Thyagaraj, T. (2025). Effectiveness of Methylene Blue Value Test to Assess the Modification in Calcium Carbide Residue Treated Clayey Subgrade Soil. In: Thyagaraj, T., Ravichandran, P.T., Janardhanan, G., Bhuvaneshwari, S., Muttharam, M., Maji, V.B. (eds) Characterization and Behaviour of Natural and Engineered Geomaterials. IYGEC 2021. Lecture Notes in Civil Engineering, vol 420. Springer, Singapore. https://doi.org/10.1007/978-981-97-9823-0_2 **(B)**

BC1: Sharanya, A.G., Lal, M.H., Kurre, P. (2020). Resilient Modulus of Unsaturated Soil – A Comprehensive Review. In: Satapathy, S., Raju, K., Molugaram, K., Krishnaiah, A., Tsihrintzis, G. (eds) International Conference on Emerging Trends in Engineering (ICETE) 2019. Learning and Analytics in Intelligent Systems, vol 2. Springer, Cham. https://doi.org/10.1007/978-3-030-24314-2_19 **(SCOPUS) (A)**

Conference Proceedings

CP5: Sharanya, A. G., Mudavath, H., & Thyagaraj, T. (2023) Microstructural Evolution and Strength of Clay Soil Stabilized with Calcium Based Inorganic Additives, *Indian Geotechnical Conference 2024* **(Accepted)**

CP4: Sharanya, A.G., Heeralal, M., Thyagaraj, T. (2023). Impact of Cyclic Wetting-Drying on Stiffness of Carbide Slag Stabilized Clay. ***2nd GeoSS-MGS Conference in Geotechnical Engineering***.

CP3: Sharanya, A.G., M Heeralal, T Thyagaraj (2022) Efficiency of Stabilized Expansive Subgrade in Resisting Characteristic Surface Movement due to Seasonal Moisture Variation, Proceedings of EDUCATION 5.0 - ROLE OF INSTITUTION, INDUSTRY AND SOCIETY (ERIIS-2022)" held on 14th & 15th October 2022, NIT Warangal, India

CP2: Sharanya, A. G. (2023) **"**Invisible Women in STEM", Proceedings of the Women Inclusive Network (WIN)-2023 organized by NIT Warangal on 17-18 March 2023.

CP1: A G. Sharanya, T. Meenambal (2016) "Assessment of Strength Characteristics of Expansive Subgrade Soil Stabilized with Bagasse Ash", Proceedings of the Fifth National Conference on Recent Advancements in Geotechnical Engineering, May 06, 2016. Government College of Technology, Coimbatore.

INTERNATIONAL CONFERENCE PRESENTATION

1. **Sharanya, A.G.,** Heeralal, M., Thyagaraj, T. (2023). Impact of Cyclic Wetting-Drying on Stiffness of Carbide Slag Stabilized Clay. ***2nd GeoSS-MGS Conference in Geotechnical Engineering***, Nov 29- Dec 2, 2023

TECHNICAL SKILLS

- **Statistical Learning:** Regression, Probability Distribution Functions, Generalized Linear Models, SPSS-IBM
- **Mathematical Tools:** MATLAB (ANN)
- **Computer Vision:** ImageJ, MeshLAB, Avizo3D
- **Modelling** and **Simulations:** Plaxis®2D, 3D, ABAQUS, Interface and interaction modelling using "All-atom Molecular Dynamics"

ACADEMIC ACCOMPLISHMENTS

- Selected for receiving ***Full Funding from*** the ***International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE)*** to present at the 2nd GeoSS-MGS Conference in Dec 2023, Singapore.
- Developed **Soil Suction Testing Facility** at Geotechnical Engineering Laboratory, National Institute of Technology Warangal, Telangana, India
- Assisted in **framing and introducing the Unsaturated Soil Mechanics Course (CE5415)** as an Elective Course for Graduates in Geotechnical Engineering at the National Institute of Technology Warangal, Telangana, India

TRAINING PROGRAMMES

- ***Mechanics of Unsaturated Soils***, GIAN course organized at Indian Institute of Technology Madras (IITM), India (10th -20th December 2019)
- Lecture Series on Advancements in Geotechnical Engineering: From Research to Practice (AGERP)- ***International Workshop on Biogeotechnics*** (24th – 26th February 2022)
- Online Workshop on ***Soft-Computing Techniques for Civil Engineers,*** MITS, Andhra Pradesh, India (5th -13th December 2022)
- Online Workshop on ***Multivariate Regression and R Programming*** (Feb 2023)
- Participated in 5 days' ***workshop on Geotechnical Engineering Concepts & Software Solutions Using PLAXIS 3D*** (31st March-4th April 2023)
- Karyashala high-end workshop on ***"Current and Future Prospects of Modern Construction Materials and Practices,"*** NIT Andhra Pradesh, India (24th – 30th July 2023).
- Participant in one learning hour on ***"The Future of Calcined Clays in the UK"*** organized by The Institute of Concrete Technology, UK on 10th November 2023.
- Recipient of Certificate of Professional Development Hours for completing **Pile Foundation Workshops** provided by Soil Mechanics and Foundations Division of ***Canadian Geotechnical Society on*** 6th Dec 2023**.**
- Participated in 3rd International Workshop on **Technologies for Low-Carbon and Lean Construction (TLC2), IIT Madras** (29th -30th January 2024)
- Participating in the **International Symposium on Geotechnical Aspects of Heritage**

Structures (ISGHS 2024), at NIT Tiruchirapalli, India (14th -16th February 2024)

JOURNAL REVIEWER

- Innovative Infrastructure Solutions, Springer Publications
- Bulletin of Engineering Geology and the Environment, Springer Publications
- Journal of Materials in Civil Engineering, ASCE Publications
- Journal of Building Pathology and Rehabilitation, Springer Publications
- Scientific Reports, Nature
- Journal of Building Engineering, Elsevier Publications