

Curriculum Vitae

Dr. D. N. Arnepalli

Associate Professor

Department of Civil Engineering

Indian Institute of Technology Madras, Chennai - 600036, India

Email: arnepalli@iitm.ac.in

Academic Profile

- Ph. D. (Civil Engineering, Specialization in Geotechnical Engineering), Indian Institute of Technology Bombay, Mumbai.
- M. Tech. (Civil Engineering, Specialization in Geotechnical Engineering), Indian Institute of Technology Bombay, Mumbai, India.
- B. Tech. (Civil Engineering), College of Engineering, Jawaharlal Nehru Technological University, Kakinada, India.

Professional Experience

- July 2016 – Present: Associate Professor, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai, India.
- December 2008 - June 2016: Assistant Professor, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai, India.
- July 2007- December 2008: Associate Research Director, GeoEngineering Centre at Queen's-RMC, Queen's University, Kingston, Ontario, Canada.
- January 2006 - June 2007: Post Doctoral Fellow, GeoEngineering Centre at Queen's-RMC, Queen's University, Kingston, Ontario, Canada.

Research Interests

- Biogeotechnics for cleanup of the environment
- Geomaterials stabilization using chemical, biopolymer, electrokinetic and biological processes
- Geological sequestration of greenhouse gases
- Design of barrier and buffer systems for hazardous waste disposal
- Unsaturated Behaviour of Geosynthetic Clay Liners (GCLs) and Compacted Clay Liners (CCLs)

Student Guidance

Doctoral Thesis (Ph. D.)

1. Nithya, K. M. (2011). "Evaluation of Geomaterials for their Application as Landfill Liner." Doctoral Thesis, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai, India. (Co-supervised with Prof. S. R. Gandhi, Department of Civil Engineering, IIT Madras, Chennai)
2. Saranya, N. (2017). "Evaluation of Macro-Level Engineering Behavior of Fine-Grained Geomaterials Based on Surface Properties." Doctoral Thesis, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai, India.
3. Chinchu Cherian (2018). "Evaluation of Lime Stabilization Mechanisms in Fine-Grained Soils from the Chemico-Mineralogical Perspective." Doctoral Thesis, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai, India.
4. Surya, S. S. (2018). "An Integrated Approach for Characterization of Buffer Materials to Contain Hazardous Waste." Doctoral Thesis, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai, India.
5. Nikhil John, K. (2020). "Study on Surface Charge Modifications and Calcium Migration during Soil Electrokinetics." Doctoral Thesis, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai, India.
6. Surabhi Jain (2020). "Stabilization of Coarse-grained Geomaterial by Biochemical Process." Doctoral Thesis, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai, India.
7. Biju, M. S. (2021). "Stabilization of Fine-grained Soils with Bio-polymers." Doctoral Thesis, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai, India.

Master of Science [By Research] Thesis (M. S.)

8. Aswathy, K. (2013). "Geosequestration of Carbon Dioxide: Geomaterial-Gas Interaction." Master of Science Thesis, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai, India.
9. Bandipally Sandeep (2017). "Characterization of Lime-Treated Soils for Assessing Short-Term Strength Behaviour." Master of Science Thesis, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai, India.
10. Anjana, R. K. (2017). "Diffusive Transport of Methane and Volatile Organic Compounds through HDPE Geomembranes". Master of Science Thesis, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai, India.

Master of Technology (M. Tech.) Dissertations

11. Selvaganesh, S. (2010). "Development of Rapid Methodology to Determine Diffusion Characteristics of Geomaterials." Master of Technology Dissertation, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai, India. (Innovative Student Project Award, IC&SR, IIT Madras)
12. Maniraj, S. (2010). "Assessment of Concepts and Methodologies used for Design of Cover Systems for Waste Disposal Facilities." Master of Technology Dissertation, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai, India.

13. Hanmant, M. K. (2012). "Assessment of Sorption and Desorption Characteristics of Geomaterials." Master of Technology Dissertation, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai, India.
14. Ros, A. J. (2014). "Analysis of Thermal Property of Geomaterial." Master of Technology Dissertation, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai, India.
15. Leeban, J. P. (2014). "Sorption Characteristics of Geomaterials for Waste Containment." Master of Technology Dissertation, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai, India.
16. Vinay Kumar, G. (2015). "Thermal Analysis of Engineered Multi Barrier Systems for Hazardous Waste Management." Master of Technology Dissertation, Department of Civil Engineering, National Institute of Technology Rourkela, Rourkela, India (Co-supervised with Prof. N. R. Patra, Department of Civil Engineering, NIT Rourkela, Rourkela, India).
17. Ravi Ranjan (2017). "Geotechnical Characterization of Light Weight Cellular Cemented Clays for Geoenvironmental Applications." Master of Technology Dissertation, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai, India.
18. Christina S Alexander (2017). "Role of pH on Diffusion of Calcium Ion in Soil." Master of Technology Dissertation, Department of Civil Engineering, Cochin University of Science and Technology, Kochi, Kerala, India (Co-supervised with Prof. Sobha Cyrus, Department of Civil Engineering, CUSAT, Kochi, Kerala, India).
19. Christina Jery (2017). "Assessment of Diffusive Transport of VOCs through Composite Liners." Master of Technology Dissertation, Department of Civil Engineering, Cochin University of Science and Technology, Kochi, Kerala, India (Co-supervised with Prof. Sobha Cyrus, Department of Civil Engineering, CUSAT, Kochi, Kerala, India).
20. Anjitha, K. (2018). "Biocementation of Sand by Microbial Induced Calcite Precipitation." Master of Technology Dissertation, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai, India.
21. Namitha Roy (2020). "Diffusive Transport of VOCs and Methane through Composite Liners." Master of Technology Dissertation, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai, India.
22. Pranaya, D. (2020). "Study of Compressibility of Clayey Soils from Microstructure Perspective." Master of Technology Dissertation, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai, India.

Dual Degree Dissertations

23. Sriram Nihar, T. (2013). "A Methodology to Determine Thermal Properties of Geomaterial." Dual Degree Dissertation, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai, India.
24. Nikhil, A. (2013). "Measurement of Diffused Double Layer Properties using Impedance Spectroscopy and its Applications." Dual Degree Dissertation, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai, India.

25. Sourabh Kalgunde (2016). "Studies on Pore Size Distribution and Air Permeability Characteristics of Coarse-grained Materials." Dual Degree Dissertation, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai, India.
26. Syed Taiyeb Badr (2016). "Numerical Studies on Thermo-Hydro-Mechanical Behaviour of Caprock for Geosequestration of Greenhouse Gases." Dual Degree Dissertation, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai, India.

Bachelor of Technology (B. Tech.) Projects

27. Rajkumar, N. (2010). "Geosequestration of Green House Gases." Bachelor of Technology Project Report, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai, India.
28. Rajkumar Meena (2011). "Gas Permeability through Soils." Bachelor of Technology Project Report, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai, India.
29. John Abraham, S. (2015). "Evaluation of Pore Size Distribution Characteristics of Geomaterial using Digital Image Processing." Bachelor of Technology Project Report, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai, India.
30. Sundar Ganesh, M. L. (2016). "Evaluation of Ion Migration Mechanism in Stabilization of Soft Soils using Lime Piles" Bachelor of Technology Project Report, Department of Civil Engineering, Indian Institute of Technology Madras, Chennai, India.

List of Publications

Refereed Journals

1. Sana, N., Arnepalli, D. N. and Krishnan, C. (2020). "Kinetics and Stoichiometry of an Efficient Methanotroph Methylosarcina sp. LC-4 Isolated from a Municipal Solid Waste Dumpsite". *Journal of Environmental Engineering, ASCE, In Press.*
2. Biju, M. S. and Arnepalli, D. N. (2020). "Effect of Biopolymers on the Permeability of Sand-bentonite Mixtures". *Journal of Rock Mechanics and Geotechnical Engineering*, g, <https://doi.org/10.1016/j.jrmge.2020.02.004>.
3. Surabhi, J. and Arnepalli, D. N. (2020). "Adhesion and De-adhesion of Ureolytic Bacteria on Sand under variable Pore Fluid Chemistry." *Journal of Environmental Engineering, ASCE*, [https://10.1061/\(ASCE\)EE.1943-7870.0001708](https://10.1061/(ASCE)EE.1943-7870.0001708).
4. Kollannur, N. J. and Arnepalli, D. N. (2019). "Methodology for Determining Point of Zero Salt Effect of Clays in terms of Surface Charge Properties." *Journal of Materials in Civil Engineering, ASCE*, [https://doi.org/10.1061/\(ASCE\)MT.1943-5533.0002947](https://doi.org/10.1061/(ASCE)MT.1943-5533.0002947).
5. Kollannur, N. J. and Arnepalli, D. N. (2019). "Electrochemical Treatment and Associated Chemical Modifications of Clayey Soils: A Review." *International Journal of Geotechnical Engineering*, <https://doi.org/10.1080/19386362.2019.1653513>.
6. Surabhi, J. and Arnepalli, D. N. (2019). "A Biochemically Induced Carbonate Precipitation in Aerobic and Anaerobic Environments by Sporosarcina pasteurii." *Geomicrobiology Journal*, Taylor & Francis, <https://doi.org/10.1080/01490451.2019.1569180>.
7. Surya S. S. and Arnepalli, D. N. (2018). "A prediction Model for the Gas Permeability of Geomaterials." *Environmental Geotechnics*, ICE Publishing, <https://doi.org/10.1680/jenge.15.00062>.

8. Bandipally, S., Cherian, C. and Arnepalli, D. N. (2018). "Characterization of Lime-Treated bentonite Using Thermogravimetric Analysis for assessing its Short-term Strength Behaviour" *Indian Geotechnical Journal*, <https://doi.org/10.1007/s40098-018-0305-7>, 48(3), 393-404.
9. Cherian, C., Kollannur, N. J., Bandipally, S. and Arnepalli, D. N. (2018). "Calcium Adsorption on Soils: Effects of Mineralogy, Pore Fluid Chemistry and Temperature". *Applied Clay Science*, <https://doi.org/10.1016/j.clay.2018.02.034>, 160, 282-289.
10. Saranya, N. and Arnepalli, D. N. (2018). "Effect of Drying Technique on Pore Structure Characteristics of Fine-Grained Geomaterials" *International Journal of Geotechnical Engineering*, <http://dx.doi.org/10.1080/19386362.2017.1304501>, 12(6), 578-591.
11. Partha Narayan Mishra, Surya Surendran, Vinay Kumar Gadi, Ros Ann Joseph, Dali Naidu (2017). "Generalized Approach for Determination of Thermal Conductivity of Buffer Materials." *Journal of Hazardous, Toxic, and Radioactive Waste (ASCE)*, [https://doi.org/10.1061/\(ASCE\)HZ.2153-5515.0000357](https://doi.org/10.1061/(ASCE)HZ.2153-5515.0000357),
12. Rowe, R. K. Brachman, R. W. I., Hosney, M. S., Take, W. A., Arnepalli, D. N. (2017). "Insight into Hydraulic Conductivity Testing of Geosynthetic Clay Liners (GCLs) Exhumed after 5 and 7 Years in a Cover." *Canadian Geotechnical Journal*, 54(8): 1118-1138, <https://doi.org/10.1139/cgj-2016-0473>.
13. Cherian, C. and Arnepalli, D. N. (2018). "Material Characterisation by Digital Image Analysis: A Review" *Environmental Geotechnics*, In Press, DOI: <http://dx.doi.org/10.1680/jenge.16.00010>.
14. Rajesh, S., Rao, B. H., Sreedeeep, S. and Arnepalli, D. N. (2015). "Environmental Geotechnology: An Indian Perspective." *Environmental Geotechnics*, ICE Publishing, In Press, DOI: <http://dx.doi.org/10.1680/jenge.14.00047>.
15. Nithya, K. M., Arnepalli, D. N. and Gandhi, S. R. (2015). "Study on Factors Affecting Heavy Metal Sorption Characteristics of Two Geomaterials." *Geotechnical Engineering Journal of the SEAGS & AGSSEA*, 46 (4), 16-23, ISSN 0046-5828.
16. Take, W. A., Rowe, R. K., Brachman, R. W. I., Arnepalli, D. N. and (2015). "Thermal Exposure Conditions for a Composite Landfill Liner with a Black Geomembrane Exposed to Solar Radiation." *Geosynthetics International*, 22 (1), 93-109.
17. Cherian, C. and Arnepalli, D. N. (2015). "A Critical Appraisal of the Role of Clay Mineralogy in Lime Stabilization." *International Journal of Geosynthetics and Ground Engineering*, Springer Publishing, 1 (1), 1.8, 1-20.
18. Ewais, A. M. R., Rowe, R. K., Brachman, R. W. I. and Arnepalli, D. N. (2014). "Service Life of a High-Density Polyethylene Geomembrane under Simulated Landfill Conditions at 85 °C." *Journal of Geotechnical and Geoenvironmental Engineering*, 140 (11), 04014060.
19. Nithya, K. M., Arnepalli, D. N. and Gandhi, S. R. (2012). "Role of Sorption Characteristics of Geomaterials on Long Term Performance of Landfill Barrier." *International Journal of Soft Computing and Engineering*, 2 (5), 77-86.
20. Rowe, R. K., Islam, M. Z., Brachman, R. W. I. and Arnepalli, D. N. (2010b). "Antioxidant Depletion from an HDPE Geomembrane under Simulated Landfill Conditions." *Journal of Geotechnical and Geoenvironmental Engineering*, 136 (7), 930-939.
21. Rowe, R. K., Rimal, S., Arnepalli, D. N. and Bathurst, R. J. (2010a). "Durability of Fluorinated High Density Polyethylene Geomembrane in the Arctic." *Geotextiles and Geomembrane*, 28, 100-107.

22. Arnepalli, D. N., Hanumantharao, B., Shanthakumar, S. and Singh, D. N. (2010). "Determination of Distribution Coefficient of Geomaterials and Immobilizing Agents." *Canadian Geotechnical Journal*, 47, 1139-1148.
23. Arnepalli, D. N., Shanthakumar, S. Hanumantha Rao, B., Singh, D. N. (2008). "Comparison of Methods for Determining Specific Surface Area of Fine-grained Soils." *Geotechnical and Geological Engineering*, 26 (2), 121-132.
24. Arnepalli, D. N., Das, B. B. and Singh, D. N. (2007). "Methodology for Rapid Determination of Pozzolanic Activity of Materials." *Journal of ASTM International*, 4 (6), Published online 11th July 2007.
25. Hanumantharao, B., Arnepalli, D. N. and Singh, D. N. (2007). "Accelerated Tests for Determining Diffusion Characteristics of the Intact Rock Mass." *Journal of Testing and Evaluation*, 35 (2), 111-117.
26. Witthüser, K., Arnepalli, D. N. and Singh, D. N. (2006). "Investigations on Diffusion Characteristics of Granite and Chalk Rock Mass." *Geotechnical and Geological Engineering*, 24 (2), 325-334.
27. Witthüser, K., Arnepalli, D. N. and Singh, D. N. (2004). "Determination of Diffusion Characteristics of the Rock Mass." *Indian Geotechnical Journal*, 34 (1), 96-104.
28. Arnepalli, D. N. and Singh, D. N. (2004b). "Field Probe for Measuring Thermal Resistivity of Soils." *Journal of Geotechnical and Geoenvironmental Engineering*, 130 (2), 213-216.
29. Arnepalli, D. N. and Singh, D. N. (2004a). "A Generalized Procedure for Determining Thermal Resistivity of Soils." *International Journal of Thermal Sciences*, 43 (1), 43-51.
30. Singh, D. N., Devid, K. and Arnepalli, D. N. (2003). "Fabrication of Thermal Probes for Estimation of Soil Thermal Resistivity." *Journal of Testing and Evaluation*, 31 (1), 65-72.

Book Chapters

31. Singh, D. N., Shukla, S. K. and Arnepalli, D. N. (2011). "Chapter on Earth Dams, Handbook of Geosynthetic Engineering." Edited by Sanjay Kumar Shukla, Thomas Telford Limited, London, U.K. www.icevirtuallibrary.com/content/book/101178.

Peer Reviewed Conferences

32. Surabhi, J. and Arnepalli, D. N. (2019). "Evaluation of Microbes Suitability for Biomodification of Geomaterial using Microbially Induced Calcium Carbonate Precipitation Process." *Proceedings of the 4th World Congress on Civil, Structural, and Environmental Engineering (CSEE'19)*, 7-9 April, Rome, Italy, Extended Abstract and Presentation (Best Paper Award).
33. Sachin, P. Gettu, R. and Arnepalli, D. N. (2019). "The Effect of Accelerated Aging on Polymer Impregnated AR and E-glass Textile Reinforced Concrete." *2019 EMI International Conference*, 3-5 July, Lyon, France. (Extended Abstract and Poster Presentation).
34. Kollanur, N. J. and Arnepalli, D. N. (2019). "Influence of Acid and Alkali Treatment on Physical and Surface Charge Properties of Clayey Soils." *International Conference on Clay Science and Technology (Euroclay 2019)*, 1-5 July, Paris, France. (Extended Abstract and Poster Presentation).
35. Biju, M. S. and Arnepalli, D. N. (2019). "Gas Permeation Characteristics of Biopolymer-modified Fine-grained Geomaterial." *International Conference on Clay Science and Technology (Euroclay 2019)*, 1-5 July, Paris, France. (Extended Abstract and Poster Presentation)

36. Dhanalakshmi, P. and Arnepalli, D. N. (2018). "The Durability of Cementitious Phases in Lime Stabilized Soils: A Critical Review." *Proceedings of Indian Geotechnical Conference*, 13-15 December, Bangalore, India.
37. Singh, D. N. and Arnepalli, D. N. (2018). "Centrifuge Modeling of Contaminant Transport in Geomaterials". *The International Congress on Environmental Geotechnics*, 164-171, 28th October- 1st November 2018. Hangzhou, China.
38. Saranya, N. and Arnepalli, D. N. (2017). "Characterizing the Dielectric Response of Compacted Fine-grained Soils using Impedance Spectroscopy." *XVI International Clay Conference, ICC 2017*, Granada, Spain, Vol. 7, pp. 676.
39. Cherian, C., Bandipally, S., Kollanur, N. J. and Arnepalli, D. N. (2017). "Study on Calcium Sorption Mechanisms in Clay-Lime System." *XVI International Clay Conference, ICC 2017*, Granada, Spain, Vol. 7, pp. 140.
40. Arsha Lekshmi, K. R. and Arnepalli, D. N. (2017). "A Critical Review on Water Vapour Transport Through Geomaterials." *Geotechnical Frontiers 2017*, 12-15 March 2017, Orlando, Florida, United States of America, pp. 746, DOI: 10.1061/9780784480472.079.
41. Surya, S. S., Arsha Lekshmi, K. R., Nikhil John, K. and Arnepalli, D. N. (2017). "Coupled Flow of Heat and Moisture through Compacted Geomaterials." *Geotechnical Frontiers 2017*, 12-15 March 2017, Orlando, Florida, United States of America, pp. 846.
42. Bandipally, S., Cherian, C. Anjana, K. and Arnepalli, D. N. (2016). "Sorptions and Diffusion Studies to Evaluate the Degree of Lime Stabilization." *Proceedings of Indian Geotechnical Conference*, 15-17 December, Chennai, India.
43. Cherian, C. and Arnepalli, D. N. (2016). "Re-Appraisal of Physico-Mechanical Stability of Lime Treated Soils." *Proceedings of Indian Geotechnical Conference*, 15-17 December, Chennai, India.
44. Cherian, C., Bandipally, S., Arnepalli, D. N., Dhulipala, V. R. and Korupolu, R. N. (2016). "Reappraisal of Optimum Lime Content Determination for Lime Stabilization of Fine-grained Soils." *6th Asian Regional Conference on Geosynthetics*, 8-11 November 2016, New Delhi, India.
45. Saranya, N. and Arnepalli, D. N. (2016). "Effect of Pore Size Distribution on Unconfined Compressive Shear Strength." *Proceedings of Indian Geotechnical Conference*, 15-17 December, Chennai, India.
46. Arsha Lekshmi, K. R. and Arnepalli, D. N. (2016). "A Methodology to Determine Water Vapour Diffusion Characteristics of Geomaterials." *Proceedings of Indian Geotechnical Conference*, 15-17 December, Chennai, India.
47. Surya, S. S. and Arnepalli, D. N. (2016). "Effect of Sample thickness on Laboratory Determination of Gas Permeability of Buffer Material." *Proceedings of Indian Geotechnical Conference*, 15-17 December, Chennai, India.
48. Surabhi, J. and Arnepalli, D. N. (2016). "Biomineralisation as a Remediation Technique: a Critical Review." *Proceedings of Indian Geotechnical Conference*, 15-17 December, Chennai, India.
49. Nikhil, J. and Arnepalli, D. N. (2016). "Factors influencing Zeta Potential of Clayey Soils." *Proceedings of Indian Geotechnical Conference*, 15-17 December, Chennai, India.
50. Biju, M. S. and Arnepalli, D. N. (2016). "Biopolymer Modified Soil: Prospects of a Promising Green Technology." *Proceedings of Indian Geotechnical Conference*, 15-17 December, Chennai, India.

51. Anjana, R. K. and Arnepalli, D. N. (2016). "Role of Diffusion on the Transport of Volatile Organic Contaminants through Geomembranes in Composite Liner Systems." *6th Asian Regional Conference on Geosynthetics*, 8-11 November 2016, New Delhi, India.
52. Anjana, R. K., Arnepalli, D. N., Cherishma, P., Gandhi, S. R. and Divakara Rao, K. (2016). "Case Study on the Reservoir Seepage at Concentrated Solar Thermal Power Plant, Rajasthan, India." *6th Asian Regional Conference on Geosynthetics* to be held on 8-11 November 2016, New Delhi, India.
53. Rajagopal, K. and Arnepalli, D. N. (2015). "Thirty Years of Teaching and Research on Geosynthetics at Indian Institute of Technology Madras." *Proceedings of International Symposium Geosynthetics-The Road Ahead*, 5-6 November, New Delhi, India.
54. Anjana, R. K. and Arnepalli, D. N. (2015). "A Critical Appraisal on Developments in Landfill Engineering." *Proceedings of International Symposium Geosynthetics-The Road Ahead*, 5-6 November, New Delhi, India.
55. Rajagopal, K. and Arnepalli, D. N. (2015). "State-of-the-Art on the Applications of Geosynthetics for Dam Repair and Rehabilitation." *Proceedings of First National Dam Safety Conference*, 257-264, 24-25 March, Indian Institute of Technology Madras, Chennai, India.
56. Mishra, P. N., Gadi, V. K., Surya, S. S. and Arnepalli, D. N. (2014). "Appraisal of Safe Placement Distance Between Canisters in a Typical Deep Geological Repository." *Proceedings of GEN-2014*, 11-12 October, Allahabad, India. (Best Paper Award)
57. Cherian, C. Arnepalli, D. N., Dogga, T. S. S., Raviteja, N. B., Gorle, S. V. and Balraj, N. M. (2014). "Assessment of Grain-Size and Pore-Size Distribution using Digital Image Analysis." *Proceedings of Indian Geotechnical Conference*, 18-20 December, Kakinada, India.
58. Bandipally, S., Cherian, C., Arnepalli, D. N. and Pooja, C. P. (2014). "Influence of pH on Long Term Performance of Lime Stabilized Fine-grained Soils." *Proceedings of Indian Geotechnical Conference*, 18-20 December, Kakinada, India.
59. Chelliah, J. and Arnepalli, D. N. (2014). "A Critical Appraisal on Electrokinetic Remediation of Contaminated Soils." *Proceedings of Indian Geotechnical Conference*, 18-20 December, Kakinada, India.
60. Surya, S. S., Joseph, R. A. and Arnepalli, D. N. (2014). "Modeling and Analysis of Heat Migration through Buffer Material.", *Proceedings of Indian Geotechnical Conference*, 18-20 December, Kakinada, India.
61. Arnepalli, D. N. and Rejoice, A. A. (2013). "Service Life and Long-term Performance of Geosynthetic Liners under Simulated Landfill Conditions." *Proceedings of Geosynthetics India-2013*, 23-25 October, New Delhi, India.
62. Chinchu, C. and Arnepalli, D. N. (2013). "Role of Lime Diffusion in Stabilization of Fine-grained Soils: A Critical Review." *Proceedings of Fourth Indian Young Geotechnical Engineer's Conference*, 17-18 May, Indian Institute of Technology Madras, Chennai, India.
63. Saranya, N. and Arnepalli, D. N. (2013). "Influence of Zeta Potential on Fundamental Behaviour of Clayey Soils." *Proceedings of Fourth Indian Young Geotechnical Engineer's Conference*, 17-18 May, Indian Institute of Technology Madras, Chennai, India.
64. Arnepalli, D. N. and Rejoice, A. A. (2013). "Evaluation of Geosynthetic Liner Long-term Performance under Landfill Conditions." *Proceedings of Geopractices*, 3 October, Jawaharlal Nehru Technological University, Hyderabad.

65. Arnepalli, D. N. and Rejoice, A. A. (2012). "Durability and Long-term Performance of High Density Polyethylene Geomembrane.", *Proceedings of ASCE Conference on Geosynthetic Lining Solution and Related Issues*, Bangalore, 1, 72-91.
66. Rejoice, A. A. and Arnepalli, D. N. (2012). "Nanoindentation of High Density Polyethylene Geomembrane." *Proceedings of Indian Geotechnical Conference*, 2, 798-801, 13-15 December, New Delhi, India.
67. Aswathy Krishnan, Arnepalli, D. N. and Rajkumar, M. (2012). "Gas Permeability Characteristics of Sand-bentonite Mixtures." *Proceedings of Indian Geotechnical Conference*, 2, 802-805, 13-15 December, New Delhi, India.
68. Kakade, H. M. Arnepalli, D. N. (2012), "Sorption and Desorption Characteristics of Geomaterials." *Proceedings of Indian Geotechnical Conference*, 2, 826-829, 13-15 December, New Delhi, India.
69. Nitya, K. M., Gandhi, S. R. and Arnepalli, D. N. (2010). "Determining the Suitability of Locally Available Soil as a Liner Material." *Proceedings of Third International Perspective on Current and Future State of Water Resources & the Environment*, 5-7 January, Indian Institute of Technology Madras, Chennai, India.
70. Nitya, K. M., Gandhi, S. R. and Arnepalli, D. N. (2010). "Effect of pH on Sorption Characteristics of Bentonite." *Proceedings of 6th International Congress on Environmental Geotechnics*, 8-12 November, New Delhi, India.
71. Rowe, R. K. and Arnepalli, D. N. (2008b). "The Effects of Landfill Temperature on the Long-term Performance of Composite Liners." *Proceedings of The 12th International Conference of the International Association of Computer Methods and Advances in Geomechanics (12th IACMAG)*, 1-6 October, Goa, India.
72. Rowe, R. K. and Arnepalli, D. N. (2008a) "Theme lecture on Modelling the Effects of Ageing of Geomembranes on Contaminant Transport and the Long-term Performance of Landfill Composite Liners." *Proceedings of The 12th International Conference of the International Association of Computer Methods and Advances in Geomechanics (12th IACMAG)*, 1-6 October, Goa, India.
73. Brachman, R. W. I., Rowe R. K., Arnepalli, D. N., Dickenson, S., Islam, M. Z. and Sabir, A. (2008). "Development of an Apparatus to Simulate the Ageing of Geomembranes under Chemical Exposure Elevated Temperatures and Applied Stresses." *Proceedings of The First Pan American Geosynthetics Conference & Exhibition*, 444-451, 2-5 March, Cancun, Mexico.
74. Take, W. A., Arnepalli, D. N., Brachman, R. W. I. and Rowe R. K. (2007). "Laboratory and Field Calibration of TDR Probes for Water Content Measurement." *Proceedings of 60th Canadian Geotechnical Conference*, 1865-1871, 21-24 October, Ottawa, Canada.
75. Brachman, R. W. I., Rowe R. K., Take, W. A., Arnepalli, D. N., Chappel, M. J., Bostwick, L. E. and Beddoe, R. (2007) "Queens's Composite Geosynthetic Liner Experimental Site." *Proceedings of 60th Canadian Geotechnical Conference*, 2135-2142, 21-24 October, Ottawa, Canada.
76. Arnepalli, D. N., Parashar, A. K. and Singh, D. N. (2005). "Chloride Ingress in Portland Slag Cement Concrete – A Case Study." *Proceedings of 9th NCB International Seminar*, 4, 646-651, 8-11 November, New Delhi, India.
77. Parashar, A. K., Arnepalli, D. N. and Singh, D. N. (2005). "Durability of Portland Slag Cement Concrete - A Case Study on Chloride Ingress." *Proceedings of ACECON2005 ICI-ASIAN Conference*, VII-23-27, 22-25 September, Mumbai, India.

78. Gurumoorthy, C., Singh, D. N. and Arnepalli, D. N. (2003). "A New Approach to Model Contaminant Diffusion through the Fractured Rock Mass." *Proceedings of International e-Conference*, IIT Madras, Chennai. 2003.
79. Arnepalli, D. N. and Singh, D. N. (2003). "Determination of Cation Exchange Capacity of Soils using Atomic Absorption Spectrometer." *Proceedings of Indian Geotechnical Conference*, 197-200, 18-20 December, Roorkee, India.
80. Arnepalli, D. N. and Singh, D. N. (2002). "Estimation of Thermal Resistivity of Natural Soils." *Proceedings of Indian Geotechnical Conference*, 15-18, 20-22 December, Allahabad, India.
81. Chakravarthy, M. K., Krishnaiah, S., Singh, D. N. and Arnepalli, D. N. (2001). "Modeling of Heat Migration through Geomaterials." *Proceedings of Indian Geotechnical Conference*, 16-17, 11-16 December, Indore, India.

Academic Recognitions

- Editorial Board Member, Environmental Geotechnics Journal, ICE Publishing, during 2013-2016.
- Outstanding Reviewer Award from Applied Clay Science Journal.
- Convener, Technical Committee on Geoenvironmental Engineering, Indian Geotechnical Society (IGS), New Delhi.
- Best Paper Award, National Conference on Geoenvironmental Issues and Sustainable Urban Development (GEN-2014), Allahabad, India.
- Best Paper Award, 4th World Congress of Civil, Structural and Environment Engineering (CSEE'19), April 7-9, 2019 | Rome, Italy.
- IGS-Shri A. G. Dastidar Biennial Award-2020 for Best Paper on Ground Improvement, paper entitled "Characterization of Lime-Treated Bentonite Using Thermogravimetric Analysis for Assessing its Short-Term Strength Behaviour, Indian Geotechnical Journal, 48(3), 393-404.
- Member, Technical Committee on Environmental Geotechnics (TC215), International Society for Soil Mechanics and Geotechnical Engineering.
- Member, Technical Committee on Barriers, International Society for Geosynthetics.
- Member, Technical Committee on Geosynthetics D35 (I6-01), ASTM International

Academic and Research Contributions

- A state-of-the-art Geoenvironmental Engineering Research Laboratory has been developed by my research group from the conceptual stage in the Department of Civil Engineering, Indian Institute of Technology Madras, Chennai, India. This modern laboratory houses many facilities (list enclosed in the following sections), which are essential to conducting fundamental research in geoenvironmental engineering.
- Conceptualization, design and fabrication of a unique Geotechnical Centrifuge Facility at IIT Madras.

- Design and in-house fabrication of column flow-through test setups for establishing suitability of locally available geomaterials as liner material for waste disposal.
- Design and in-house fabrication of accelerated diffusion test setup for rapid determination of diffusion characteristics of geomaterials and geomembranes for chlorinated hydrocarbons.
- Development of gas permeability and diffusion apparatus for determining the gas transport properties through geomaterials.
- Associated with performance evaluation of a geocomposite liner, constructed to contain Jet fuel spill at Baffin Island (Canadian Arctic), under extreme cold climatic conditions.
- Active involvement in design, construction and instrumentation of Queen's Composite Geosynthetic Liner Experimental Site. The results obtained from this experimental site have enriched the scientific understanding of the geoenvironmental engineering research fraternity on long-term performance of geosynthetic liners.
- Active association with development of test setup called Geosynthetic Liner Longevity Simulator (GLLS) to mimic the ageing mechanisms and predict serviceability of geosynthetic liners under the combined influence of physical, chemical and thermal loading.
- Development of a field thermal probe and the numerical algorithm, MDDTHERM, for estimating the thermal properties of geomaterials.

Development of Geoenvironmental Engineering Research Laboratory

We have developed a modern geoenvironmental research laboratory at the Department of Civil Engineering, IIT Madras. This laboratory houses many facilities, including:

- Atomic Absorption Spectrophotometer
- UV-vis. Spectrophotometer
- Gas Chromatography (with gas sampling valves and two detectors: FID and TCD)
- Differential Scanning Calorimeter
- Fourier Transform-Infrared Spectroscopy
- Thermo Gravimetric Analyzer and Differential Thermal Analyzer
- Universal Testing Machine with temperature control chamber and non-contact video extensometer
- AutoSorb (Physi-chemisorption and vapor sorption analyzer, BET surface area analyzer)
- Gas Pycnometer
- Water Quality Analyser
- Xenon Arc Weatherometer
- High-pressure Gas Sorption Analyzer
- UV-Weather Tester

- Geotechnical Centrifuge (2m diameter, Designed at IIT Madras and Fabricated by Eltek India, Mumbai)
- Time Domain Reflectometer
- Data logger (Campbell Scientific, Canada)
- Flexible Wall Permeameter
- Ultra-Sieve Shaker (up to 20 μm)
- Melt-Indexer
- Environmental Stress Crack Resistance Apparatus
- Autoclave
- Laminar Air Flow Chamber
- BOD Incubator
- Temperature and Humidity Control Chambers
- Gas Permeability and Diffusion Apparatus
- Workstations for Numerical Modelling
- Small size Research Centrifuge
- The research group also initiated the design and in-house fabrication of many test setups such as Thermal needle probes, Thermal diffusion apparatus, Accelerated diffusion test setup, Column flow through sorption setup, Coupled heat & moisture migration setup, multi-position magnetic stirrer, Dogbone sample cutter, Headspace sampler for GC, Gas pressure distribution panel, Gas permeability and diffusion apparatus.

Undergraduate and Postgraduate Courses Taught

I have offered core, elective and laboratory courses pertaining to geotechnical engineering for both undergraduate and postgraduate students. I have also introduced an elective course on "Barrier Systems for Waste Containment" to the postgraduate students. The summary of the courses I have taught is presented below.

- Advanced Soil Mechanics (Postgraduate, core course)
- Barrier Systems for Waste (Postgraduate, elective course)
- Geosynthetics & Reinforced Soil Structures (Postgraduate, elective course)
- Geotechnical Seminar / Industrial Seminar (Postgraduate, core course)
- Geotechnical Engineering-I (Undergraduate, core course)
- Geotechnical Engineering-II (Undergraduate, core course)
- Principles of Reinforced Soil Structures (Undergraduate, elective course)
- Experimental Geotechnics Lab (Postgraduate, laboratory course)
- Construction Materials Lab (Undergraduate, laboratory course)

Short Term Course Conducted

- A one-week CEP-QIP short term course on “Role of Geosynthetics in Civil Infrastructure and Geoenvironmental Protection Projects” was conducted during 10-14 August 2009. Around twenty faculty members from various AICTE recognized engineering colleges across the country as well as fifteen deputy chief engineers of southern railways have participated in this short-term course.
- A three-day training program on "Stability and Seepage Analyses of Earth and Rockfill Dams" was conducted during 3-5 January 2018 for Engineers of Tamilnadu Government Implementing Agencies of Dam Rehabilitation and Improvement Program (DRIP).
- A one-week CEP-QIP short term course on “Geosynthetics as Modern Civil Engineering Construction Materials” was conducted during 5-10 February 2018. Around thirty nine faculty members from various AICTE recognized engineering colleges across the country have participated in this short-term course.
- A three-day training program on "Application of Geosynthetics in Dam Construction, Improvement and Rehabilitation" was conducted during 5-7 August 2019 for Engineers of Tamilnadu, Madhya Pradesh and Kerala Government Implementing Agencies of Dam Rehabilitation and Improvement Program (DRIP).
- A one-week CEP-QIP short term course on “Porous Medium Theories and Applications” was conducted during 6-10 January 2020. Around twenty fine faculty members from various AICTE recognized engineering colleges across the country have participated in this short-term course

Technical Program Committee Member

- The 12th International Conference of the International Association of Computer Methods and Advances in Geomechanics (12th IACMAG-2008), Goa, India.
- First National Dam Safety Conference (2015), Chennai, India.
- Geosynthetics India-2013, New Delhi, India.
- The 6th International Geotechnical Symposium on Disaster Mitigation in Special Geoenvironmental Conditions (6IGS-2015), Chennai, India.
- Session official, The 12th International Conference of the International Association of Computer Methods and Advances in Geomechanics (12th IACMAG-2008), Goa, India.
- Panelist, Golden Jubilee Celebrations of Geotechnical Engineering at Department of Civil Engineering, IIT Delhi, GEOTECHNOLOGY 2030.
- Member, Publication Panel, The 6th International Geotechnical Symposium on Disaster Mitigation in Special Geoenvironmental Conditions (6IGS-2015), Chennai, India.
- Member, Publication Panel, Indian Geotechnical Conference 2016 (IGC-2016), Chennai, India.

Reviewer of Journals and Conferences

I am an active reviewer of the following peer reviewed journals and conferences in the area geotechnical and geoenvironmental engineering. My professional contribution has been recognized with "Outstanding Reviewer Award" and "Certificate of Reviewing".

List of Journals

- Geotechnical and Geoenvironmental Engineering, ASCE
- Journal of Environmental Engineering, ASCE
- Journal of Hazardous, Toxic, and Radioactive Waste, ASCE
- Journal of Materials in Civil Engineering, ASCE
- Canadian Geotechnical Journal
- Geotechnical Testing Journal, ASTM
- Journal of Testing and Evaluation, ASTM
- Environmental Geotechnics, ICE Publishing
- Journal of Hazardous materials, Elsevier Publishing
- Applied Clay Science, Elsevier Publishing
- Clay and Clay Minerals, Springer Publishing
- SN Applied Sciences, Springer Publishing
- Geotechnical and Geological Engineering, Springer Publishing
- Indian Geotechnical Journal, Springer Publishing
- International Journal of Geosynthetics and Ground Engineering, Springer Publishing
- International Journal of Environment and Waste Management, Inder Science Publishing
- Sadhana-Academy Proceedings in Engineering Science, Springer Publishing
- Journal of Field Archaeology, Taylor & Francis Online
- Marine and Petroleum Geology, Elsevier Publishing
- Geofluids, Wiley Online
- Marine Georesources & Geotechnology, Taylor & Francis Online
- Water Air & Soil Pollution, Springer Publishing
- Frontiers of Environmental Science and Engineering, Springer Publishing
- Fuel, Elsevier Publishing
- Progress in Energy and Combustion Science, Elsevier Publishing
- KSCE Journal of Civil Engineering, Springer Publishing

- Environmental Earth Sciences, Springer Publishing

List of Conferences

- The 12th International Conference of the International Association of Computer Methods and Advances in Geomechanics (12th IACMAG-2008), Goa, India
- 6th International Congress on Environmental Geotechnics (6ICEG- 2010), New Delhi, India
- 7th International Congress on Environmental Geotechnics (7ICEG-2014), Melbourne, Australia
- Indian Geotechnical Conferences (IGC-2011, Kochi; IGC-2012, New Delhi; IGC-2014, Kakinada; IGC-2017, Guwahati; IGC-2019, Surat)
- Indian Young Geotechnical Engineering Conference (4IYGEC-2013), Chennai, India
- Geosynthetics India-2013, New Delhi, India
- The 6th International Geotechnical Symposium on Disaster Mitigation in Special Geoenvironmental Conditions (6IGS-2015), Chennai, India
- First National Dam Safety Conference (2015), Chennai, India

Invited Lectures

1. Invited lecture on "*Stabilization of Coarse-grained Geomaterial by Biochemical Process*", Department of Civil Engineering, JNTU Kakinada, India (29th October 2020).
2. *Types and Functions of Geosynthetic Materials, Testing and Performance Evaluation of Geosynthetic Materials & Polymer Science and Manufacturing of Geosynthetics* (29th August 2020), QIP short term course, Department of Civil Engineering, Dr. Mahalingam College of Engineering and Technology, Pollachi, Tamilnadu, India.
3. Invited webinar on "*Polymer Science and Manufacturing of Geosynthetics*", Kerala Highway Research Institute, Kariyavattom, Kerala, India (18th July 2020).
4. Invited lecture on "*Evaluation of Lime Stabilization Mechanisms in Fine-grained Soils from the Chemico-mineralogical Perspective*", Department of Civil Engineering, JNTU Kakinada, India (10th August 2018).
5. Invited lecture on "*Principles of Waste Containment and Longevity of Barrier Systems*", India International Science Festival 2017.
6. *Visit to RWTH Aachen university, Germany, to participate in the kick-off meeting of newly established strategic partnership between RWTH Aachen University and Indian Institute of Madras* (6-9 September 2016).
7. *Role of Moisture Sensors in Deep Geological Repository* (February 2016), Indo-German Workshop on New Generation Sensors for Unsaturated Soils and Water technology, Department of Civil Engineering, Ruhr-University Bochum, Germany.
8. *Principles of Waste Containment and Longevity of Barrier Systems* (November 2015), The Workshop on Waste Dumps and Contaminated Sites, Department of Civil Engineering, Indian Institute of Technology Delhi, New Delhi, India.

9. *Barrier Systems for Disposal of Hazardous and Non-Hazardous Wastes (October 2014)*, Radiological Safety And Environmental Group, Indira Gandhi Centre for Atomic Research (IGCAR), Kalpakkam, India.
10. *Ageing and Long-Term Performance of Geosynthetic Liners Under Landfill Conditions (April 2012)*, Workshop on Landfill Design and Construction, Indian Geotechnical Society Chennai Chapter & Department of Civil Engineering, Anna University, Chennai, India
11. *Long Term Performance of HDPE GM Under Simulated Realistic Landfill Conditions (January 2010)*, QIP short term course, Department of Civil Engineering, Indian Institute of Technology Guwahati, India.

Membership of Professional Bodies

Member, International Geosynthetics Society (IGS), USA.

Member, ASTM International, USA.

Member, American Society of Civil Engineers, USA.

Life Member, Indian Geotechnical Society, New Delhi, India.

Member, IACMAG, USA.

Member, ISSMGE.