



Dr. Deepa G. Nair

Date of Birth : 30.05.1970

Official address : Professor
Division of Civil Engineering
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Educational Qualifications

- **PhD**, Sustainable Affordable Housing for the poor in Kerala, *Delft University of Technology, The Netherlands, 2006.*
- **Master of Science**, Habitat Technology, *Birla Institute of Technology & Science, Pilani, India, 1995.*
- **Bachelor of Technology**, Civil Engineering, *University of Kerala, 1992.*

Teaching Experience (21 years)

Joined School of Engineering, Cochin University of Science and Technology (CUSAT), Cochin, as Assistant Professor in the year 1999. Presently working as Professor in Civil Engineering,

Industrial Experience (4 years)

- **Apprentice Engineer, Kerala State Nirmithi Kendra, (1993-1994)**
Acquired training in Cost effective and environment friendly (CEEF) technology.
- **Habitat Engineer, Kerala State Nirmithi Kendra, (1996-1999).**
 - *Experience in the execution of cost effective housing projects from the planning stage onwards.*
 - *Trainer for practicing engineers and artisans in Cost effective and environment friendly technology.*
 - *Engaged in the setting up of a production centre for cost effective building materials for Ernakulum regional centre.*

Research interests

Cost effective and environmental friendly construction techniques, Sustainable housing, Green buildings, Construction materials

Details of Publications

Year	Type of Publication
Book	
2006	Nair, D.G., 2006.Sustainable- Affordable Housing for the Poor in Kerala.ISBN-10:90-9021395-3, ISBN-13:978-90-9021:395-8
Book Chapter	
2021	Shamon K K., Nair, D.G., Feasibility of Waste Materials In High Strength Geopolymer Building Blocks, In: Sandip A. Kale editor, Efficient Engineering Systems: Volume 1, Pune: Grinrey Publications, 2021, pp. 53-62
International Journal	
1. 2021	Koya, M. N. K., & Nair, D. G. (2021). Investigations on the Pozzolanic Properties of Residual Rice Husk Ash. In <i>Advances in Sustainable Construction Materials</i> (pp. 421-431). Springer, Singapore.
2. December 2018	Sreekumar, M.G., Nair, D.G., 2018. Mechanical Properties of Stabilized Lateritic Soil Blocks with Fibrous Waste Additives, International journal of basic and applied research, December 2018, Vol. 8, No. 12, pp. 336-350. (ISSN: 2249-3352)
3. September 2018	Antony, J., Nair, D.G., 2017. Investigation on the application of clay tile wastes as a supplementary cementitious material in masonry mortar, JETIR September 2018, Volume 5, Issue 9
4. 2017	Usha, S., Nair, D.G., Vishnudas, S., 2017. Study on Development of Geopolymer binder from Terracotta Roof Tile Waste by Experimental and Statistical Method, IOP Conference Series: Materials Science and Engineering, 225, 2017
5. January 2017	Lekshmi, M.S., Vishnudas, S., Nair, D.G., 2017. An investigation on the potential of mud as sustainable building material in the context of Kerala, Int. J. Energy Technology and Policy, Vol. 13, Nos. 1/2, 2017, 107-121

6. August 2016	Usha, S., Nair, D.G., Vishnudas, S., 2016. Feasibility Study of Geopolymer Binder from Terracotta Roof Tile Waste, <i>Procedia Technology</i> 25 (2016) 194 – 200, August 2016.
7. August 2016	Antony, J., Nair, D.G., 2016. Potential of Construction and Demolished Wastes as Pozzolana, <i>Procedia Technology</i> (2016) 194 – 200, August 2016
8. June 2016	Antony, J., Nair, D.G., 2016. Roof Tile Powder as a Partial Replacement to Cement in Masonry Mortar , <i>Civil Engineering and Urban Planning: An International Journal (CiVEJ) Vol.3</i>
9. June 2016	Lekshmi, M.S., Vishnudas, S., Nair, D.G., 2014. Experimental Study on the Physical Properties of Mud Mortar in Comparison with the Conventional Mortars, <i>Civil Engineering and Urban Planning: An International Journal (CiVEJ) Vol.3</i>
10. 2015	Thomas, V R., Nair, D.G., 2015. Fly ash as a Fine Aggregate Replacement in Concrete Building Blocks, <i>International Journal of Engineering and Advanced Research Technology (IJEART) Vol.1, Issue-2, August 2015</i>
11. 2014	Usha, S., Nair, D.G., Vishnudas, S., 2014. Geopolymer binder from Industrial wastes: A Review, <i>International Journal of Civil Engineering & Technology Vol. 5, No. 12, pp. 219-225. (ISSN: 2180-3242)</i>
12. 2013	Sreekumar, M.G., Nair, D.G., 2013. Stabilized Lateritic blocks reinforced with fibrous coir wastes, <i>International Journal of Sustainable Construction Engineering & Technology Vol. 4, No. 2, pp. 23-32. (ISSN: 2180-3242)</i>
13. 2013	Koya, M.N.K., Nair, D.G., 2013. Sustainable Building blocks from Rice husk ash, <i>International Journal of Engineering Research and Science & Technology Vol. 2, No. 2, pp. 137-142.</i>
14. 2013	Nair, D.G., Sivaraman, K., Thomas, J 2013. Mechanical Properties of Rice Husk Ash (RHA) - High strength Concrete, <i>American journal of Engineering Research</i> Vol. 3, pp. 14-19.
15. 2008	Nair, D.G., Fraaij, A., Klaassen, A.A.K., Kentgens, A.P.M., 2008. A structural investigation relating to the pozzolanic activity of rice husk ashes, <i>Cement and Concrete Research, Vol. 38, (2008), pp.861-869.</i>
16. 2006	Nair, D.G., Jagadish, K.S., Fraaij, A., 2006. Reactive pozzolanas from rice husk ash: An alternative to cement for rural housing, <i>Cement and Concrete Research, Vol. 36, No. 6, pp. 1062-71.</i>
International Conference	
17. 2020	Lekshmi, M.S., Vishnudas, S. and Nair, D.G., Strength, sorptivity and shrinkage characteristics of cow dung stabilized mud mortar. <i>Materials Today: Proceedings, 32, pp.782-787.</i>
18. 2016	Lekshmi, M.S., Vishnudas, S., Nair, D.G., 2016. Materials today Proceedings of the International conference on Recent Advances in Civil Engineering, pp.67-73.
19. 2016	Shehanas, Nair, D.G., 2016. Green Building blocks from Ceramic waste, Proceedings of the International Seminar on Emerging building materials and construction Technologies conducted by BMTPC, New Delhi, India.pp.200-204.
20. 2016	Antony, J., Nair, D.G., 2016. Potential of roof tile powder as a partial replacement to cement in Masonry mortar, Proceedings of the International conference on Recent Advances in Civil Engineering, pp 87-92.2016
21. 2016	Lekshmi, M.S., Vishnudas, S., Nair, D.G., 2016. A comparison on the physical properties of mud mortar with conventional mortars, Proceedings of the International conference on Recent Advances in Civil Engineering, pp.67-73.
22. 2015	Nair, D.G., 2015. Sustainable construction practices for affordable housing, Proceedings of the 8 th International conference titled "Implementing Innovative Ideas in Structural Engineering and Project Management," ISEC PRESS, Nov 2015.
23. 2006	Nair, D.G., Vergragt, P.J., van Breugel, K., Fraaij, A., Enserink, B., 2006. Sustainable-Affordable housing for rural Kerala, Proceedings of the 6 th International postgraduate research conference in the Built and Human environment organized by Research Institute for the Built and Human Environment (BuHu), The University of Salford, UK, 6-7April 2006 , Delft University of Technology and TNO, at Delft University, The Netherlands.

24. 2006	Nair, D.G., van Breugel, K., Jagadish, K.S., Fraaij, A., 2006. Sustainable technological options for affordable housing in Kerala, Proceedings of International Conference on Sustainable Technologies for Environmental Protection – ICSTEP 2006, 7-9 Jan 2006, Coimbatore Institute of Technology, Coimbatore, India.
25. 2005	Nair, D.G., Gopikuttan, G., Enserink, B., Fraaij, A., Vergragt, P.J., Dalmeijer, R., 2005. A Conceptual Framework for Sustainable-Affordable Housing for the Rural Poor in Less Developed Economies, Proceedings of the 2005 World Sustainable building conference in Tokyo, 27-29 September 2005.
26. 2005	de Haan, A.R.C., Enserink, B., Nair, D. G., 2005. Measurement systems in practice: Comparing theory and practice in East and West. What are the common denominators of sustainable rural habitat development in India and sustainable aviation in Europe? Proceedings of Foresight management in corporations and public organizations – new visions for sustainability” – Helsinki, June 9-10, 2005
27. 2005	Nair, D.G., Gopikuttan, G., Enserink, B., Hendriks., Hendriks, Ch, F., Fraaij, A., Vergragt, P.J., Dalmeijer, R., 2005. Public Housing Schemes for the poor in Kerala: Recommendations for Sustainable Housing. Proceedings of Conference on Sustainable Building South East Asia (Sb04 Series), Kuala Lumpur, Malaysia, 11 – 13 April 2005.
28. 2004	Nair, D.G., Hendriks, Ch, F., Fraaij, A., Vergragt, P.J., Dalmeijer, R., 2004. Sustainable Habitat for Rural Kerala in Proc. of II International Basin Conference – Sustainable livelihood for the poor – Strategic imperatives and practical solutions, 16-18 March 2004, India.
National Conference	
29. 2021	Sreekumar, M.G., Nair, D.G., 2021. Feasibility of Plastic Waste as Reinforcement in the Mechanical Properties of Stabilized Lateritic Soil Blocks proceedings of 36th National Convention of Civil Engineers & National Conference on ‘Innovation, Mechanization and Modern Techniques in Civil Engineering’ organized by The Institution of Engineers (India) Jharkhand State Centre Under the aegis of Civil Engineering Division, IEI in association with Birla Institute of Technology, Mesra, Ranchi, 23-24 October, 2021, pp48-54.,
30. 2020	Thomas, R.V. and Nair, D.G., 2020, May. Investigation on the Suitability of Jarofix as a Fine Aggregate Replacement in Concrete Building Blocks. In <i>National Conference on Structural Engineering and Construction Management</i> (pp. 949-959). Springer, Cham.
31. 2020	Usha, S., Nair, D.G. and Vishnudas, S., 2020, May. Sustainability Assessment of Terracotta Tile Waste Based Geopolymer Building Block. In <i>National Conference on Structural Engineering and Construction Management</i> (pp. 169-178). Springer, Cham.
32. 2013	Varghese, K. O., Nair, D.G., Thomas, J., 2013. Prospects of straw bale masonry in Kerala, Proceedings of CUSAT national conference on Recent Advances in Structural Engineering, Kochi (Kerala), paper ID:31
33. 2012	Mohan, D., Nair, D.G., 2012. Light weight concrete blocks from crumb rubber, Proceedings of “Recent Advancements in Civil Engineering- RACE, 2012”, Ffth National Conference in Civil Engineering organized by CUSAT, November 29- December1, 2012, India.
34. 2012	Koya, N K, M., Nair, D.G., 2012. Building blocks from rice husk ash for sustainable construction, Proceedings of “Recent Advancements in Civil Engineering- RACE, 2012”, Ffth National Conference in Civil Engineering organized by CUSAT, November 29- December1, 2012, India.
35. 2012	Sreekumar, M, G., Nair, D.G., 2012. Sustainable Building blocks from laterite, Proceedings of “Recent Advancements in Civil Engineering- RACE, 2012”, Ffth National Conference in Civil Engineering organized by CUSAT, November 29- December1, 2012, India.
36. 2012	Antony, J., Nair, D.G., 2012. Application of construction and Demolition wastes – A Review, Proceedings of “Recent Advancements in Civil Engineering- RACE, 2012”, Fifth National Conference in Civil Engineering organized by CUSAT, November 29- December1, 2012, India.
37. 2010	Thomas, V R., Nair, D.G., 2010. Sustainable construction, Proceedings of “Recent Advancements in Civil Engineering- RACE, 2010”, Fourth National Conference in Civil Engineering organized by CUSAT, September 16-18, 2010, India.

38. 2008	Nair, D.G., V, Subha. 2008. Sustainable Housing and Watershed management: The case of Kerala in Emerging technologies and Financing Models for Affordable Housing in India, Directorate of Public relations and Publications, CUSAT, ISBN:978-93-80095-01-1
39. 2004	Nair, D.G., Fraaij, A., Dalmeijer, R., 2004. Straw Bale-A Sustainable Building Alternative, Proceedings of “Recent Advancements in Civil Engineering- RACE, 2004”, First National Conference in Civil Engineering organized by CUSAT, 25-27 March 2004, India.

Awards and Professional recognition

Dutch Scholarship (NUFFIC) for pursuing PhD in Netherlands during the period 2002-2006

Key note address delivered

International

- “ **Sustainable – Affordable Housing**”, Keynote address delivered in 2nd International conference on Civil Engineering (CIVIE-2017), **September 30 – October 1, 2017, Dubai**

National

- “**Sustainable – Affordable Housing**”, Keynote address delivered in the National Seminar on Green Housing and Habitats: For Eco-friendly and Sustainable growth organized by the Department of Applied Economics, **CUSAT, 28 September 2017.**
- “**Sustainable Housing**” Keynote address delivered in Bhumika 17, **School of Architecture Mookambika technical campus fest during 21 – 23, February, 2017,, Muvattupuzha**
- “**Green Buildings & Sustainable Construction**” Keynote address delivered in Two day national conference on Sustainable construction (NCSC 16) **11 – 12 February, 2016, MES , Kuttippuram, Malappuram**

Invited speech

International

- **Invited talk on the topic ‘Sustainable construction practises for Affordable Housing’** organized by the Civil Engineering School of Barcelona, University Polytechnic, Catalunya.(13/10/2021)

- **Invited talk on the topic Sustainable construction** organized by the Civil Engineering School of Barcelona, University Polytechnic, Catalunya.(14/10/2020)
- **Invited talk on the topic Sustainable – Affordable Housing for the poor in India** organized by the Civil Engineering School of Barcelona, University Polytechnic, Catalunya.(16/03/2006)

National

- **Invited talk** on the topic “Sustainable construction”, National webinar conducted by Vasthuvidyagurukulam on Sustainable construction technologies during Feb 12-21, 2021.
- **Resource person** for the AICTE sponsored Faculty development programme on Sustainable Development through Green Technology, organized by Albertian Institute of Science and Technology, Kalamssery. (12/12/2017 & 16/12/2017).
- **Resource Person**, Workshop on Sustainable Engineering, Adi Shankara Institute of Engineering & Technology, Kalady. (16/07/2015).
- **Invited talk** on the topic “Green Buildings”, School of Environmental studies, CUSAT (5/12/2014).
- **Invited talk** on the topic “Green Buildings”, K. R Gouriamma college of Engineering, (23/10/2014)
- **Resource person** –STTP on Modern trends in Energy, Environment and Green Technology organized by the Division of Mechanical Engineering under TEQIP Phase II CUAAT, (24/05/2014)
- **Invited talk** on the topic “Sustainable Housing”, K. R Gouriamma college of Engineering, (11/10/2013).
- **Resource person** –STTP on Sustainable Technologies in Engineering organized by the Division of Civil Engineering under TEQIP Phase II CUAAT, 18.03.2013 to 22.03.2013.
- **Invited talk** on Sustainable Housing & Green buildings, LaBISHaS (19/02/2013).
- **Resource person**, UGC Sponsored National Seminar ‘Towards Green Consumerism-Innovative Approaches and Practices’, organized by Dept .of Home Science, St.Teresa’s College, Ernakulam, 9-10, August, 2012.

Memberships in professional bodies

Sl. No.	Professional body	Year	Position
1	The Indian Society of Technical Education (ISTE)	2001	Life Member
2	Indian Geotechnical Society, Kochi Chapter (IGS)	2011	Life Member
3	Indian Society of Systems for Science and Engineering (ISSE)	2015	Life Member
4	Institution of Engineers (IEI)	2015	Life Member FIE

Reviewer & Programme Committee Member – Journal / Conference

Sl. No.	Year	Type of Institution/R&D labor Industry	Type of Activities
1	2018	Organizing committee member	ICRCET- 18, Fourth International conference on recent challenges on Engineering & Technology, Pune 2-3 April , 2018
2	2018	Reviewer & Technical Programme committee member	JCCME-2018, 2 ND International joint conference on civil & Mechanical Engineering, Seoul, Korea , 2-28, October 2018
3	2016	Organizing committee member	ICRACE -16, International conference on Recent Advances in Civil Engineering, CUSAT[
3	2016	Editor in chief	Civil Engineering & Urban Planning: An International Journal (CiVEJ) ISSN 2394-5818
4	2015	Reviewer & Technical Programme committee member	International Conference GEOMATE
5	2014	Reviewer & Programme Committee Member	International Conference of Architecture and Civil Engineering, Singapore
6	2013	Reviewer	ICMF 2013, 3 rd International Conference on Materials for the future Innovative Materials, Processes, Products and Applications, 6-8 Nov 2013
7	2013	Reviewer & Programme Committee Member	International Conference of Architecture and Civil Engineering, Singapore
8	2008 onwards	Reviewer	International Journal of Cleaner Production Impact factor 3.398

Ph.D. Guidance

Ph.D. degree awarded

1. **S. Usha**, Roof tile powder waste based Geopolymer building blocks for structural masonry , 2018 September(**ICI UltraTech Awards 2018 – Outstanding Doctoral Thesis**)

Explored the possibilities of roof tile powder as a source material for geopolymer concrete and investigated its application in structural masonry.

2. **Jiji Antony**, Investigation of clay tile waste as partial replacement to cement in masonry mortar and building blocks, 2020 May (**ICI UltraTech Awards 2020 – Outstanding Doctoral Thesis**)

Roof tile powder (RTP) waste was identified as the potential source of pozzolanic material among the locally collected waste materials. Application of RTP in masonry mortar and concrete build blocks were investigated. Suitability of both mortar and building blocks for structural masonry also were investigated through this research.

Ph. D research works (continuing)

1. **Concrete building blocks for Sustainable construction**

Developed a conceptual framework for the sustainability evaluation of construction techniques / materials. Suitability of waste materials as fine aggregate replacements in concrete building blocks were investigated.

2. **Fiber reinforced lateritic blocks for structural masonry**

Suitability of the locally available lateritic soil from three different sources were investigated for block making. Strength and durability characteristics of structural masonry was investigated. Masonry wall constructed using the blocks with low strength and durability values are exposed to the natural environment for further investigations.

3. **Sustainability of Mud mortar**

Investigating the suitability of different stabilizers in the strength and durability characteristics of mud mortar and exploring the potential of soil from different sources as a raw material.

4. **Sustainability assessment tool for the residential buildings**

A conceptual framework is proposed to be developed for the sustainability assessment of residential buildings after making an evaluation and comparison of LEED & GRIHA, the

present rating systems in India with respect to the concepts of Sustainable housing. Validation of the same tool is also proposed.

5. Potential of residual rice husk ash in concrete building blocks and structural masonry

Research Profiles

Scopus

<https://www.scopus.com/authid/detail.uri?authorId=13610650200>

Google scholar link

<https://scholar.google.co.in/citations?user=gaLdKi4AAAAJ&hl=en&authuser=1>

Researchgate

https://www.researchgate.net/profile/Deepa_Nair14

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