

**Dr. Insha Wani**

Female

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**ACADEMIC QUALIFICATIONS**

| Sr. No | Qualification                 | Degree  | Branch   | % Marks/<br>CGPA | Date             |                     | University/<br>Institutions  |
|--------|-------------------------------|---------|--|------------------|------------------|---------------------|--|
|        |                               |         |  |                  | Entry            | Completion          |  |
| 1.     | <b>PhD</b>                    | PhD     | Civil Engineering<br>(Geotechnical Engineering)                            | 7.75             | November<br>2018 | February 4,<br>2023 | Indian Institute of<br>Technology Jammu                                  |
| 2.     | <b>PG</b>                     | M.Tech  | Civil Engineering<br>(Geotechnical and<br>Geoenvironmental<br>Engineering) | 9.24             | 2016             | 2018                | Lovely Professional<br>University, Phagwara,<br>Punjab                   |
| 3.     | <b>UG</b>                     | B. Tech | Civil Engineering  | 7.24             | 2012             | 2016                | Lovely Professional<br>University, Phagwara,<br>Punjab                   |
| 4.     | <b>HSSC (12<sup>th</sup>)</b> |         | Non-medical  | 84.6%            |                  | 2011                | Presentation Convent<br>Higher Secondary<br>School, Rajbagh,<br>Srinagar |
| 5.     | <b>SSC (10<sup>th</sup>)</b>  |         | English, Physics,<br>Chemistry, Maths,<br>Information<br>Technology        | 89.6%            |                  | 2009                | Presentation Convent<br>Higher Secondary<br>School, Rajbagh,<br>Srinagar |

**TECHNICAL SKILLS**

*Software:* Auto-cad, QGIS, Microsoft Office, STATISTICA

## WORK EXPERIENCE

| Position/Designation &<br>Name of Institute<br>(Starting from current position)  | From       | To         | Total        |                                    |
|--|------------|------------|--------------|------------------------------------|
|  |            |            | Years        | Months                             |
| Guest Lecturer, NIT Srinagar   | 04/09/2024 | 31/12/2024 |              | Four (4) months                    |
| Contractual Lecturer, Sher – i – Kashmir<br>University of Agricultural Sciences and<br>Technology – Kashmir, Shalimar,<br>Srinagar | 28/06/2023 | 01/08/2024 | One (1) year | Two (2) months                     |
| Guest Lecturer, Government Polytechnic<br>College, Baramulla   | 15/05/2023 | 27/06/2023 |              | One (1) month,<br>twelve (12) days |

## INTERNSHIP

- Profile:* Project trainee, Jammu and Kashmir Project Construction and Corporation, Srinagar, Jammu and Kashmir

*Duration:* June 1, 2014- July 30, 2014

*Description:* Worked to construct psychiatric for the existing hospital and renovated the hospital.

- Profile:* Project Trainee, Design Ethos & Developers

*Duration:* December 25, 2014- January 10, 2015

*Description:* Worked as a Trainee in the Department of Architecture and prepared plans for hospitals and buildings.

- Profile:* Directorate of Tourism, J&K, Srinagar

*Duration:* June 12, 2015- July 29, 2015

*Description:* Worked as a Project Trainee in the Department of Tourism. Two blocks of RCC framed structure were being constructed by J & k tourism at an estimated cost of rupees 22 crores in Srinagar. The blocks are two-storied and accommodate almost all tourist departments. It will provide information to all tourists visiting the valley.

- Profile:* Sher-i-Kashmir Institute of medical sciences, Soura, J&K

*Duration:* December 23, 2016- January 12, 2017

*Description:* Worked as a Project Trainee in Sher-i- Kashmir Institute of Medical Sciences. The construction of a state cancer institute 120 bedded hospital with full-fledged facilities for diagnosis and treatment of cancer patients with indoor and outdoor facilities is in process for the development of health care facilities for cancer patients at SKIMS.

5. *Profile:* Structural Geotechnical Engineer's consultation forum

*Duration:* June 2017- January 2018

*Description:* Worked as a Project Trainee for a thesis for which data had to be collected. The Pile Load Tests and Standard Penetration Tests were to be carried out to construct the metro, which has to be laid through Srinagar city.

## **ACADEMICS PROJECT UNDERTAKEN**

1. *Project Title:* "Project Expo"

*Year:* 2016

*Objective:* Design and Study of Lead Rubber Bearings

*Description:* Researched various methods of protecting the buildings from an earthquake and making them earthquake-resistant using Lead Rubber Bearings.

2. *Project Title:* "Explorica"

*Year:* 2016

*Objective:* Design of Tuned Mass Damper

*Description:* Conducted research on using a Tuned Mass Damper and prepared the model for protecting high-rise buildings from wind and earthquake effects.

## **PhD AREA of RESEARCH**

I have worked on using biochar produced using conventional pyrolysis and microwave-assisted pyrolysis to improve soil hydraulic properties and cracking. The objective of the thesis was to explore the influence of biochar in amending the behaviour of soil properties with respect to water retention capacity, erosion and cracking by developing Artificial Intelligence models. The study has been divided into three sub-objectives

- 1) biochar effect on the water retention capacity of soils with varying grain size distributions,
- 2) erosion prediction as a function of biochar content, degree of compaction, slope gradient, slope length, rainfall intensity and
- 3) effect of the various soil properties and biochar content on the crack intensity of biochar-amended soil.

It was observed that

- a. any increase in the water retention of soil biochar composite depends on the grain size distribution of the soil biochar composite. There is a threshold clay content (6–8%) beyond which any effect of biochar seems less significant. In soils with higher sand content, the influence of biochar in increasing Normalized Water Content (NWC) seems more pronounced on the dry side than on the wet side of the Soil Water Characteristic Curve (SWCC), even though a relatively higher amount of biochar (10%) was required to observe changes in the drier side of SWCC,
- b. an increase in biochar amendment helped decrease the total erosion rate and water flow rate, and

- c. the addition of optimum biochar percentage helped control cracking.

## CONFERENCES AND PUBLICATIONS

- **Journal Papers**

1. **Wani I**, Sharma A, Kushvaha V, et al. (2020) Effect of pH, Volatile Content, and Pyrolysis Conditions on Surface Area and O/C and H/C Ratios of Biochar: Towards Understanding Performance of Biochar Using Simplified Approach. *Journal of Hazardous, Toxic, and Radioactive Waste* 24:04020048. [https://doi.org/10.1061/\(ASCE\)HZ.2153-5515.0000545](https://doi.org/10.1061/(ASCE)HZ.2153-5515.0000545)
2. **Wani I**, Kumar H, Rangappa SM, et al. (2021) Multiple Regression Model for Predicting Cracks in Soil Amended with Pig Manure Biochar and Wood Biochar. *Journal of Hazardous, Toxic, and Radioactive Waste* 25:04020061. [https://doi.org/10.1061/\(ASCE\)HZ.2153-5515.0000561](https://doi.org/10.1061/(ASCE)HZ.2153-5515.0000561)
3. Garg, A., **Wani, I.**, Zhu, H. *et al.* Exploring efficiency of biochar in enhancing water retention in soils with varying grain size distributions using ANN technique. *Acta Geotech.* **17**, 1315–1326 (2022). <https://doi.org/10.1007/s11440-02101411-6>
4. Garg A, **Wani I**, Kushvaha V (2022) Application of Artificial Intelligence for Predicting Erosion of Biochar Amended Soils. *Sustainability* 14:684. <https://doi.org/10.3390/su14020684>

- **Review papers and collaborative works**

1. **Wani, I.**, Garg, A. Critical review on use of biochar as a modifier in asphaltic binders for pavement construction. *Environ Dev Sustain* (2024). <https://doi.org/10.1007/s10668-024-05784-y>
2. Garg, A., Huang, H., Kushvaha, V. et al. Mechanism of biochar soil pore–gas–water interaction: gas properties of biochar-amended sandy soil at different degrees of compaction using KNN modeling. *Acta Geophys.* 68, 207–217 (2020). <https://doi.org/10.1007/s11600-019-00387-y>
3. **Wani, I.**, Ramola, S., Garg, A. et al. Critical review of biochar applications in geoenvironmental infrastructure: moving beyond agricultural and environmental perspectives. *Biomass Conv. Bioref.* (2021). <https://doi.org/10.1007/s13399-021-01346-8>
4. **Wani, I.**, Narde, S.R., Huang, X. et al. Reviewing role of biochar in controlling soil erosion and considering future aspect of production using microwave pyrolysis process for the same. *Biomass Conv. Bioref.* (2021). <https://doi.org/10.1007/s13399-021-02060-1>
5. **Wani, I.**, Kushvaha, V., Garg, A. et al. Review on effect of biochar on soil strength: Towards exploring usage of biochar in geo-engineering infrastructure. *Biomass Conv. Bioref.* (2022). <https://doi.org/10.1007/s13399-022-02795-5>

## REVIEWER

- Materials Circular Economy
- Biogeotechnics
- Indian Geotechnical Journal
- Smart Construction and Sustainable Cities

## **WORKSHOPS ATTENDED**

- Hydrus workshop at IIT Mandi, September 9-11th, 2019
- Academic Writing Workshop, including Research Career Opportunities in China organized in Jammu (25 – 26<sup>th</sup> October 2019)