

# Ravinder

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## RESEARCH INTERESTS

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Two-dimensional materials, shock wave effects on materials, dynamic fracture and crack propagation on ballistic impact, ML aided material design, molecular dynamics and peridynamics.

## EDUCATION

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**PhD, Civil Engineering** 2017-Present  
*Indian Institute of Technology Delhi, Delhi*

**B. Tech., Civil Engineering** 2011-2015  
*Indian Institute of Technology Roorkee, Roorkee*

## RESEARCH ACHIEVEMENTS AND AWARDS

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### PyGGi (Python for Glass Genomics)

It is an indigenous industry relevant software package that uses trained Machine Learning algorithms to predict/optimize composition-property relationships in inorganic glasses. It will make the tedious process of designing tailored glasses economical in terms of time, effort and money.

*The software package is launched through FITT IITD and is available at [www.pyggi.iitd.ac.in](http://www.pyggi.iitd.ac.in).*

### Awards:

- SERB Travel grant (2019)
- ICG-GOMD 2019 registration grant (2019).
- Prime Ministers Research Fellowship (PMRF)
- SITARE/SRISTI Gandhian Young Technological Innovation (GYTI) Awards/Appreciations (2020) for PyGGi

## PUBLICATIONS

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1. Ravinder, R., Kumar, R., Agarwal M. and Krishnan, N. A. **Evidence of a two-dimensional glass transition in graphene: Insights from molecular simulations.** Scientific reports, 9(1), p.4517 (2019)
2. Ravinder, R., Garg, P. and Krishnan, N. A. **Glass transition and crystallisation in hexagonal boron nitride: Crucial role of orientational order.** Advanced Theory and Simulations(2019)
3. Krishnan, N. A., Ravinder, R., Kumar, R., Le Pape, Y., Sant, G. and Bauchy, M. **Density–stiffness scaling in minerals upon disordering: Irradiation vs. Vitrification.** Acta Materialia, 166, pp.611–617 (2019)
4. Bishnoi, S., Singh, S., Ravinder, R., Bauchy, M., Gosvami, N.N., Kodamana, H. and Krishnan, N. A. **Predicting Young’s modulus of glasses with sparse datasets using machine learning.**Journal of Non-Crystalline Solids, 524, p.119643.(2019)
5. Rivera, J., Berjikian, J., Ravinder, R., Kodamana, H., Das, S., Bhatnagar, N., Bauchy, M. and Krishnan, N. A. **Glass fracture upon ballistic impact: New insights from peridynamics simulations.**Frontiers in Materials, 6, p.239.(2019)
6. Dhawan, S., Ghosh, S., Ravinder, R., Bais, S. S., Basak, S., Krishnan, N. A., Agarwal, M., Banerjee, M., Haridas, V. **Redox Sensitive Self-Assembling Dipeptide for Sustained Intracellular Drug Delivery**Bioconjugate chemistry, 30(9), pp.2458-2468.(2019)
7. Ravinder, R., Sreedhara, K. H., Bishnoi, S., Grover, H. S. Bauchy, M., Kodamana, H., Krishnan, N. A. **Deep learning aided rational design of oxide glasses.**Materials Horizons(2020)
8. Ravinder, R., Kumar, A., Kumar, R. Vangla, P. and Krishnan, N. A. **Irradiation induced brittle-to-ductile transition in  $\alpha$ -quartz**Journal of the American Ceramic Society(2020)
9. Pratik Bhaskar, Yashasvi Maurya, Rajesh Kumar, R Ravinder, Amarnath R Allu, Sumanta Das, Nitya Nand Gosvami, Randall E Youngman, Mikkel S Bødker, Morten M Smedskjaer, Mathieu Bauchy, Krishnan, N. A. **Cooling rate effects on the structure of 45S5 bioglass: Insights from experiments and simulations.**Journal of Non-Crystalline Solids(2020)
10. Nayak, S., Ravinder, R., Krishnan, N.M. and Das, S.A **Peridynamics-Based Micromechanical Modeling Approach for Random Heterogeneous Structural Materials.**Materials(2020)

## RESEARCH CONFERENCE AND WORKSHOP

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**COMPFLU-2018: 12th International Conference on Complex Fluids and Soft Matter** December 2018

*Indian Institute of Technology Roorkee, Roorkee*

*Poster: Role of topological defects on the rigidity of glassy graphene.*

**Advanced Simulation Methods: DFT, MD and Beyond** March 2019

*Indian Institute of Technology Delhi, New Delhi*

*Tutor: Molecular dynamics workshop 2*

*Poster: Two-dimensional glass transition in graphene: Insights from molecular simulations.*

**Machine Learning For Engineering Applications (TEQIP Course)** June 2019

*Indian Institute of Technology Delhi, New Delhi*

*Tutor: Introduction to Machine Learning.*

**IIT Delhi Industry Day 2019** September 2019

*Indian Institute of Technology Delhi, New Delhi*

*Poster: Designing Functional Glasses using Machine Learning.*

**Artificial Intelligence Concepts and Multidisciplinary Applications in Modern Biology** September 2019

*International Center for Genetic Engineering and Biotechnology, New Delhi*

*Tutor: Introduction to Machine Learning Tools.*

**Material Science and Technology (MST) 2019** October 2019

*Oregon Convocation Center, Portland, USA*

*Talk: Machine learning to predict the elastic properties of glasses.*

## WORK EXPERIENCE

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**Trainee Structural Design Engineer** 8 months

*ASC Infratech Pvt Ltd*

*Noida*