

Curriculum Vitae



Brief Profile:

I am currently working as an Assistant Professor in Department of Mechanical Engineering at National Institute of Technology, Tiruchirappalli, since 2020. I received my Ph.D. (MS-Ph.D.) from Indian Institute of Technology, Madras in 2019 and Bachelor of Engineering (Hons) in Mechanical Engineering from BITS Pilani in 2013. I worked as National Post-Doctoral fellow (SERB-India) at Indian Institute of Technology, Hyderabad before joining National Institute of Technology, Tiruchirappalli. My Ph.D. work deals with the thermo-mechanics of ceramic pebble in nuclear fusion reactor.

My research areas include mechanics of granular systems, high temperature material testing, Design of Experiments and Optimization techniques (unconventional), and also application of machine learning to mechanical design and manufacturing. Research is focused on the fundamental mechanics involving granular systems viz. packing, force transmission, powders mechanics etc. using Discrete Element modelling. I also work on application of recent advances in computational techniques (ML) to mechanical design and manufacturing through various coupling techniques.

1. Name: Dr. Raghu Ram Karthik Desu
2. Designation: Assistant Professor
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6. Field(s) of Specialization:
Granular Mechanics, Discrete Element Modelling,
Optimization (GA, PSO, etc..), Predictive Modelling
(ANN, SVR, etc..), High Temperature Material testing

7. Employment Profile:

Job Title	Employer	From	To
Assistant Professor	NIT Tiruchirappalli	June 2020	Till Date
SERB National-PDF	IIT Hyderabad	Jan 2020	May 2020
Post-Doc Fellow	IIT Madras	July 2019	Dec 2019

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8. Academic Qualifications:

Examination	Board / University	Year	Division/ Grade	Subjects
Doctor of Philosophy	Indian Institute of Technology, Madras	2019	-	-
Master of Science (MS-PhD dual degree program)	Indian Institute of Technology, Madras	2019	First Class	Mechanical Engineering
Bachelor of Engineering (B.E. Hons)	Birla Institute of Technology and Science, Pilani	2013	Distinction	Mechanical Engineering

9. Academic/Administrative Responsibilities within the University

Position	Faculty/Department/Centre/Institution	From	To
Academic Coordinator	Institute	15-08-2022	Till date
Anti-Ragging committee member	Institute	July 2022	Till date

12. Fellowships

Year of Award	Name of the Fellowship	Awarding Organization	From (Month/Year)	To (Month/Year)
2020	National Post-Doctoral Fellowship	SERB India	Jan 2020	May 2020
2019	Institute Pre-Doc fellowship	IIT Madras	Jan 2019	June 2019

16. Participation in Workshops/ Symposia/ Conferences/ Colloquia /Seminars/ Schools etc. (mentioning the role)

Date (s)	Title of Activity	Level of Event	Role	Event Organized by	Venue
Dec 2016	Second International Conference on Powder, granule and bulk solids: Innovations and Applications	International	Paper Presenter	PGBSIA -16	Jaipur
Nov 2016	International Workshop on	International	Paper Presenter	University of Sydney	Sydney

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	Mechanics of Energy Materials				
Aug 2016	Second workshop on Lithium ceramics for tritium breeding	National	Paper Presenter	IIT Madras	Chennai
Oct 2015	International Conference on Fusion Reactor Materials	International	Poster	ICFRM-17	Aachen Germany

20. Academic Foreign Visits

Country	Duration of Visit	Programme
Australia	13-15 Nov 2016	International Workshop on Mechanics of Energy Materials
Germany	11-16 October 2015	International Conference on Fusion Reactor Materials (ICFRM-17)

21. Publications

(A) Refereed Research Journals:

Author(s)	Title of Paper	Journal	Volume (No.)	Page numbers	Year	Impact Factor of the Journal (Optional)
Akhil Vijayan, Arnab Banerjee, Raghuram Karthik Desu	Role of packing defects in force networks of hexagonally packed structures using discrete element method	Granular Matter	24	1-17	2022	
Jaggannagari, Sujith Reddy, Raghuram Karthik Desu, Jörg Reimann,	DEM simulations of vibrated sphere packings in slender prismatic containers	Powder Technology			2021	

Yixiang Gan, Marigrazia Moscardini, and Ratna Kumar Annabattula.						
Raghuram Karthik Desu, Yixiang Gan, Marc Kamlah, Ratna Kumar Annabattula	Compaction mechanics of a polydisperse crushable spherical granular assembly using discrete element method	International Journal of Advances in Engineering Sciences and Applied Mathematics	13	114- 121	2021	
Raghuram Karthik Desu, Akhil Reddy Peeketi, Ratna Kumar Annabattula	Influence of bed conditions on the effective thermal conductivity of ceramic breeder pebble beds using thermal DEM (TDEM)	Fusion Engineering and Design	159		2020	
Akhil Reddy Peeketi, Raghuram Karthik Desu, Pramod Kumbhar, Ratna Kumar Annabattula	Thermal analysis of large granular assemblies using a hierarchical approach coupling the macro-scale finite element method and micro-scale discrete element method through artificial neural networks	Computational Particle Mechanics	6		2019	
Raghuram Karthik Desu, Akhil Reddy Peeketi, Ratna Kumar Annabattula	Artificial neural network-based prediction of effective thermal conductivity of a granular bed in a gaseous environment	Computational Particle Mechanics	6		2019	
Raghuram Karthik	Particle size effects on the		21	1-12	2019	

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Desu, Ratna Kumar Annabattula	contact force distribution in compacted polydisperse granular assemblies	Granular Matter				
Raghuram Karthik Desu, Paritosh Chaudhuri, Ratna Kumar Annabattula	High temperature oedometric compression of Li ₂ TiO ₃ pebble beds for Indian TBM	Fusion Engineering and Design			2018	
Raghuram Karthik Desu, Anand Moorthy, Ratna Kumar Annabattula	DEM simulation of packing mono-sized pebbles into prismatic containers through different filling strategies	Fusion Engineering and Design	127		2018	
Raghuram Karthik Desu, Yixiang Gan, Marc Kamlah, Ratna Kumar Annabattula	Mechanics of binary crushable granular assembly through discrete element method	Nuclear Materials and Energy	9	237-241	2016	
Raghuram Karthik Desu, Swadesh Kumar Singh, Amit Kumar Gupta	Comparative study of warm and hydromechanical deep drawing for low-carbon steel	The International Journal of Advanced Manufacturing Technology	85	661-672	2016	
Raghuram Karthik Desu, Hansoge Nitin Krishnamurthy, Aditya Balu, Amit Kumar	Mechanical properties of Austenitic Stainless Steel 304L and 316L at elevated temperatures	Journal of Materials Research and Technology	5	13-20	2016	

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Gupta, Swadesh Kumar Singh						
Amit Kumar Gupta, Sharath Chandra Guntuku, Raghuram Karthik Desu, Aditya Balu	Optimisation of turning parameters by integrating genetic algorithm with support vector regression and artificial neural networks	The International Journal of Advanced Manufacturin g Technology	77	331- 339	2015	

(B) Conferences/Workshops/Symposia Proceedings

Author(s)	Title of Abstract/ Paper	Title of the Proceedings	Page numbers	Conference Theme	Venue	Year
Raghuram Karthik Desu, Sharath Chandra Guntuku, B Aditya, Amit Kumar Gupta	Support vector regression based flow stress prediction in austenitic stainless steel 304	Procedia Materials Science	V6 p-368- 375		India	2014
K Sajun Prasad, Raghuram Karthik Desu, Jayahari Lade, Swadesh Kumar Singh, Amit Kumar Gupta	Finite element modeling and prediction of thickness strains of deep drawing using ANN and LS- Dyna for ASS304	AIP Conference Proceedings	V1567 p-402-405			2013