

Faculty Profile

Brief Profile

Dr. Ratna Pal, Assistant Professor at RVCE, with more than 20 years of experience in the field of Education and Research. Pursued B.E and M.E in Metallurgy from IEST, Shibpore, WB and Indian Institute of Science (IISc) Bangalore respectively followed by Ph.D in polymer Science from University of Mysore.

Faculty Photo

Expertise at the different field of material science and technology, which involves alloy development, synthesis of nanomaterials and characterization, development of composites, analysis and modelling of tool wear, designing of different mechanical components, development of cermets with their characterization and assessment of environmental degradation for nanocomposites.

Dedicated to undergraduate and post graduate studies for last two decades, acquired hands on experience to create study materials, study curriculum, examination processes, pedagogy, different ICT tools and many more. Several curriculum projects include integrated cutting-edge technologies, sustainable manufacturing technology, modelling and simulation of mechanical components enhanced with AI tools.

My work represents a seamless fusion of traditional materials engineering with modern computational techniques, empowering the next generation of engineers to build smarter and more resilient technologies.

Personal Information

- **Name:** Dr. RATNA PAL
- **Designation:** Assistant Professor
- **Department:** Mechanical Engineering
- **Email:** ratnapal@rvce.edu.in
- **Phone:** 08068188144

Google Scholar: <https://scholar.google.co.in/citations?user=q4mu3BcAAAAJ&hl=en&authuser=3>

ResearchGate: <https://www.researchgate.net/profile/Ratna-Pal-2>

ORCID: <https://orcid.org/0000-0002-2911-1906>

Domain of Expertise

- Material Science & Alloy Development – Understanding the properties, composition, and applications

of various metals and alloys.

- Nanomaterials & Advanced Materials – Research in high-performance materials for industrial and biomedical applications.
- Corrosion & Surface Engineering – Studying degradation processes and developing protective coatings to enhance material lifespan.
- Heat Treatment & Phase Transformations – Optimizing metallurgical processes to improve mechanical properties.
- Extractive Metallurgy & Metal Processing – Techniques for refining, purifying, and enhancing metal production efficiency.
- Computational Metallurgy & Simulation – Utilizing AI-driven modeling to predict material behavior and optimize manufacturing processes.
- Assessment and modelling of tool wear – Performing machining operations and monitoring and creating data to fit in different AI enabled tool to predict tool wear for several machining conditions

Research Focus

- **Primary Area:** - Nanomaterials & Surface Engineering, Manufacturing process optimization, Computational Metallurgy & AI-driven Modeling, Failure Analysis & Fracture Mechanics
- **Allied Areas:** - Metallurgy in Aerospace & Defense Applications, Corrosion Science in Marine & Chemical Industries, Biomedical Metallurgy & Implant Materials

Academic Qualifications

- **Ph.D.:** Polymer Science, University of Mysore, 2014 – *"Moisture Diffusion through Organomodified Montmorillonite/Polymer Nanocomposites and Resulting Property Degradations"*.
- **M. E.:** Metallurgy, Indian Institute of Science (IISc), Bangalore, Karnataka, 1998.
- **B. E.:** Mechanical Engineering, Bengal Engineering College (Now IIST), Shibpore, WB, 1996.

Professional Experience

Experience			
S.No	Institute/College/Industry	Job Title	Duration (From- To)
1	R.V.College of Engineering (RVCE)	Assistant Professor	08/02/2008 – till date
2	Jnana Vikas Engineering of Technology (JVIT)	Lecturer	08/08/2006 to 07/02/2008

3	Indian Institute of Technology, IIT, Delhi	Project assistant	28/12/2001 to 30/06/2004
4	Jawaharlal Nehru Aluminium Research Development and Design Centre (JNARDDC)	Scientist I	09/03/1999 to 09/03/2000
5	Naval Material Research Laboratory (NMRL)	Junior Research Fellow (JRF)	08/03/1998 to 08/03/1999

Publications

Journal Publications

Ratna Pal, H N Narasimha Murthy, Sreejith M, K R Vishnu Mahesh, M Krishna, S C Sharma, 'Effect of laminate thickness on the moisture diffusion behaviour of polymer composites in artificial seawater ageing', Frontier in Materials Science, 2012; 6(3): 225 - 235.

Ratna Pal, H. N. Narasimha Murthy, S. C. Sharma, M. Krishna, S. Lohith, 'Influence of organomodified nanoclay on the glass transition temperature and microhardness of epoxy', International Journal of Science Research, 2012; 1 (3): 125 - 129.

Ratna Pal, H N Narasimha Murthy, M, K R Vishnu Mahesh, K S Rai, M Krishna, S C Sharma, 'Influence of organomodified nanoclay on the mechanical behaviour of vinylester / glass nanocomposites', International Journal of Chem Tech Research, 2014; 6(2): 916 - 928.

K. R. Vishnu Mahesh, H. N. Narasimha Murthy, B. E. Kumaraswamy, N. Raghavendra, R. Sridhar, M. Krishna, Niranjan Pattar, Ratna Pal and B. S. Sherigara, 'Synthesis and characterisation of organomodified Na - MMT using cation and anion surfactants', Frontiers in Chemistry, China, 2011; 6 (2): 153 – 158.

Sridhar R, Narasimha Murthy H N, Karthik B, Vishnu Mahesh K R, Krishna M, Ratna Pal, 'Moisture diffusion through nanoclay / vinylester processed using twin screw extrusion', Journal of Vinyl Additive and Technology, 2014, DOI 10.1002/vnl.21367.

Salim Firdosh, H.N Narasimha Murthy, Ratna Pal, G. Angadi, Raghavendra N, Krishna M, 'Durability of GFRP nanocomposites subjected to hygrothermal ageing', Composites : Part B, 2015; 69: 443-451.

Nagesh S, Narasimhamurthy H N, Ratna Pal, Krishna M, Satyanarayana B S. Influence of Nanofillers on the Quality of CO2 Laser Drilling in Vinylester / Glass Using Orthogonal Array Experiments and Grey Relational Analysis. 'Optics & Laser Technology', (Accepted). DOI : 10.1016/j.optlastec.2014.12.002

Kaushik Vijaya Prasad, Ratna Pal, and Vishnu Kuncham Rajendraprasad, "Optimization of Cutting Parameters during Dry Turning of Austenitic Stainless Steel Using nc-AlTiN/Si₃N₄, TiAlN, and TiN Coated Inserts," Journal of Materials, vol. 2016, Article ID 3495698, 5 pages, 2016. doi:10.1155/2016/3495698

S Nagesh, HN Narasimha Murthy, R Pal, SD Supreeth Dev, M Krishna. Investigation of the effect of nanofillers on the quality of CO₂ laser cutting of FRP nanocomposites. The International Journal of Advanced Manufacturing Technology 90, 2047-2061. 2017. <https://doi.org/10.1007/s00170-016-9535-y>

Nagesh S, Ratna Pal, Mohammed Nawaz. Multi-objective optimization of influential factors on CO₂ laser cutting in Ni based superalloy using Box Behnken and ANN approach. TIJER – INTERNATIONAL RESEARCH JOURNAL. a240-254, 2024. <http://doi.one/10.1729/Journal.41473>

Conference Papers

Manjunath Hosur, Ratna Pal, "Simulation of hot working of B-Pillar" Poster presentation at IMTEX Forming 2016.

Nivesh Kumar, Ratna Pal, "Fabrication and characterization of graphene based nanocomposites" at AMMD, 2016

Pankaj, Ratna Pal, H.N Narasimha Murthy, Performance Prediction of VinylEster / Glass in Hygrothermal Ageing Using Time Temperature Superposition Principle, Conference on Advances in Design, Manufacturing, and Management (ADMM) Organized by Dept. Of mechanical Engineering R.V.College of Engineering, Bangalore, 20th May 2013

Pankaj, Ratna Pal, H.N Narasimha Murthy, "Performance prediction of vinylester / glass in hygrothermal ageing using time temperature superposition principle", Proceedings of the Conference, ADMM, May 2013, R.V. College of Engineering, Bangalore, May 2013.

Vishnu Mahesh K.R, H. N. Narasimha Murthy, R Sridhar, M. Krishna, **Ratna Pal**, N. Raghavendra, Niranjan Pattar, Effectt of Cloisite Na and Cloisite 15A nanoclays to the matrix of vinylester / glass composites on their mechanical and fire behhavior, National Conference on Developments in Composite Materials and Processes 2011(DCMP-2011), Organized by Dept. Of mechanical Engineering , Don Bosco Institute of Technology, Bangalore April 7-9, 2011

B Karthik, H. N. Narasimha Murthy, Vishnu Mahesh K.R, Sridhar R, **Ratna Pal**, M. Krishna, S Lohith, Anil M, Srinidhi, Somashekhar, Moisture diffusion through nanoclay / vinylester composites due to alkaline ageing, National Conference on Developments in Composite Materials and Processes 2011(DCMP-2011), Organized by Dept. Of mechanical Engineering, Don Bosco Institute of Technology, Bangalore April 7-9, 2011

Ratna Pal “Preparation of Al beverage can from indigenous Al alloys” Poster paper presentation NMD-ATM 1999-International symposium IIT, Kanpur, November 14 - 16, 1999.

Ratna Pal “study on creep deformation behaviour and life assessment modelling” NMD-ATM 2003-International symposium on technology, Innovation for cost reduction in steel industry, Kolkata, November 14 - 16, 2003.

Ratna Pal “Deformation and fracture behaviour of gamma Titanium” NMD-ATM 2003-International symposium on technology, Innovation for cost reduction in steel industry, Kolkata, November 14-16, 2003.

Ratna Pal, A.N.Kumar, “Gamma TiAl intermetallics processing, deformation and fracture characteristics”, Material show 2003, international conference on advanced in materials and processes for industrial application, September 25 - 27, 2003, Pune, India.

Mandira Bhattacharya, Ratna Pal, A.N.Kumar, Pesel Ladislav “Fracture Mechanism in Deep Drawing steel sheets with geometrical constraints”, international conference, Fractography 2003, November 25 - 27, 2003, High Tatras, Slovak Republic.

Completed Research Projects

- Parametric study of Al live bath in BALCO, BALCO, 1999-2000, Co-PI
- Preparation of Al beverage cans from indigenous Al alloys, Jawaharlal Nehru Aluminium research Development and Design Centre (JNARDDC), 1999-2000, Co-PI
- Study the parameters of Self Propagating High Temperature Synthesis (SPHS) process for the synthesis of metal- ceramic composites, Naval Material Research Laboratory (NMRL), 1998 - 1999, Co-PI

Professional Memberships

- Life Member of Indian Institute of Metals, IIM
- Life Member of Indian Society for Technical Education ISTE
- Life member of Alumni Association of Indian Institute of Science, IISc
- Alumni of IEST, Shibpore, WB

Student Supervision

- M.Tech: 28
- Undergraduate Research Mentees: 41

Teaching

Core Courses: [Current semester]

- ME242TB, Materials Science for Engineers

Advanced/Lab Courses:

- ME245AI, Manufacturing Technology Lab
- ME244AI, Fluid Mechanics Lab
- ME362AI, Design of Machine Elements-II Lab
- ME121DL, IDEA Lab
- ME122GL, Computer Aided Engineering Graphics

Professional Roles

- Counsellor of VIII semester
- Dept. Academic Advisory Committee - UG & PG
- Dept. Disciplinary Committee
- Time Table Officer - UG & PG

External Connect

- Alumni of Indian Institute of Science, IISc, Bangalore
- Alumni of IEST, Shibpore, WB

Summary sheet for faculty profile:

- Designation: Assistant Professor
- Qualification: Ph. D
- Experience: 22 years
- Area of Interest: Intelligent Manufacturing, Digital Production Systems, CNC machining, robotics integration, and AI-driven optimization of manufacturing processes
- Date of Joining RVCE: 08.08.2008
- Email: ratnapal@rvce.edu.in
- Project:
- Number of UG projects guided: 20
- Number of PG projects guided: 15
- Number of Doctorate Students -
- Completed: Nil
- Guiding: Nil
- Publications:
- National Journals: Nil
- National conferences: Nil
- International Journals: 10
- International conferences: 11
- Books published: Nil
- Book chapters published: Nil
- Patent Granted: Nil