

## Dr. Pawan Sharma

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### EDUCATION

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Title	Board/University	Year of passing	Percentage/Grades
PhD	Indian Institute of Technology Delhi	2019	9.167 CGPA
M.Tech (Gold Medalist)	Motilal Nehru National Institute of Technology Allahabad	2013	9.3 CGPA
B. Tech.	Uttar Pradesh Technical University Lucknow	2008	74.94 %

### EXPERIENCE

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#### SVNIT Surat

**December 2019-Present**

Assistant Professor, Department of Mechanical Engineering, Sardar Vallabhbhai National Institute of Technology (SVNIT) Surat, Gujarat, India.

#### Pandit Deendayal Petroleum University

**May 2019-November 2019**

Assistant Professor, Department of Mechanical Engineering, Pandit Deendayal Petroleum University, Gandhinagar, Gujarat, India.

#### GLA University

**July 2013-July 2015**

Assistant Professor, Department of Mechanical Engineering, GLA University, Mathura, Uttar Pradesh, India.

#### Sharda Group of Institution

**October 2008-Septmeber 2011**

Assistant Professor, Department of Mechanical Engineering, Sharda Group of Institution (Anand Engineering College), Agra, Uttar Pradesh, India.

### RESEARCH INTEREST

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Additive Manufacturing, Powder metallurgy, Rapid tooling, Next generation bioimplants, Metal 3D printing, 4D Printing.

## KEY HIGHLIGHT OF RESEARCH CAREER

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- Development of rapid tooling process using 3D printing and pressureless microwave sintering.
- Development of ultrasonic assisted pressureless sintering process.
- Development of topologically ordered iron scaffolds.

## PATENTS

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- “A Process of Preparation of Ordered Cell Metal Foam”, Patent No. 201711026320, filing date July 25, 2017 (Current Status: Published).
- “Rapid manufacturing of metal products using ultrasonic vibration assisted pressureless sintering (UAPS)”, Patent no. 201811014923, filing date April 19, 2018 (Current Status: Filed).

## INTERNATIONAL JOURNALS

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1. **P. Sharma**, P.M. Pandey, Rapid manufacturing of biodegradable pure iron scaffold using amalgamation of three-dimensional printing and pressureless microwave sintering, Proc. Inst. Mech. Eng. C J. Mech. Eng. Sci. 233 (6) (2018) 1876-1895. <https://doi.org/10.1177/0954406218778304>. **(Impact factor: 1.359)**
2. **P. Sharma**, P.M. Pandey, A novel manufacturing route for the fabrication of topologically-ordered open-cell porous iron scaffold, Mater. Lett. 222 (2018) 160–163. <https://doi.org/10.1016/j.matlet.2018.03.206>. **(Impact factor: 3.019)**
3. **P. Sharma**, P.M. Pandey, Morphological and mechanical characterization of topologically ordered open cell porous iron foam fabricated using 3D printing and pressureless microwave sintering, Materials and Design 160 (2018) 442–454. <https://doi.org/10.1016/j.matdes.2018.09.029>. **(Impact factor: 5.770)**
4. **P. Sharma**, P.M. Pandey, Corrosion behaviour of the porous iron scaffold in simulated body fluid for biodegradable implant application, Material Science & Engineering C 99 (2019)838-852. <https://doi.org/10.1016/j.msec.2019.01.114> **(Impact factor: 4.959)**
5. D.Singh, A.Rana, **P. Sharma**, P.M Pandey, D. Kalyanasundaram, Microwave Sintering of Ti6Al4V: Optimization of Processing Parameters for Maximal Tensile Strength and Minimal Pore Size. Metals 2018, 8, 1086. <https://doi.org/10.3390/met8121086> **(Impact factor: 2.259)**

6. **P. Sharma**, P.M. Pandey, Corrosion rate modelling of porous iron scaffold considering the effect of porosity and pore morphology for biodegradable implant applications, *Material Science & Engineering C* 103 (2019), 109776. <https://doi.org/10.1016/j.msec.2019.109776> (**Impact factor: 4.959**).
7. **P. Sharma**, K. Jain, P.M. Pandey, S. Mohanty, In vitro corrosion behaviour, cytocompatibility and hemocompatibility of topologically ordered porous iron scaffold prepared using 3D printing and pressureless microwave sintering, *Material Science & Engineering C* 106 (2020), 110247. <https://doi.org/10.1016/j.msec.2019.110247> (**Impact factor: 4.959**).
8. Vipin Mittal, **Pawan Sharma**, Vijay Kr Patel, Vikas Pandey and Vinod Kumar, Numerical Study of Laser Cutting of Titanium Alloy (Ti-6Al-4V), *Applied Mechanics and Materials*(Trans Tech Publication Switzerland), Vol 592-594(2014) pp-579-583. <https://doi.org/10.4028/www.scientific.net/AMM.592-594.579>.

## INTERNATIONAL CONFERENCES

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1. **P. Sharma**, D. K. Pathak, P.M. Pandey, On the in-vitro degradation behaviors of Mg, Zn and Fe specimens fabricated by microwave sintering, 39th International MATADOR Conference on Advanced Manufacturing, July 2017, The University of Manchester, Oxford Road, Manchester, UK.
2. **Pawan Sharma**, A. K. Dubey & A. K. Pandey(2014). Numerical study of temperature and stress fields in laser cutting of aluminium alloy sheet. *Procedia Materials Science*, 5, 1887-1896,

## NATIONAL CONFERENCES

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1. **Pawan Sharma** and Avanish Kumar Dubey, Numerical Study of Temperature Distribution in Laser Cutting of an Aluminium alloy, National conference on Advance Manufacturing Technology, May 22-24, 2013.
2. **Pawan Sharma** and Anurag Porwal, Analysis of Thin Walled structured beam using FE Modelling technique, National conference on Emerging Vistas of Mechanical Engineering, April 4-6 2011.

## **WORKSHOPS/INTERNSHIP/SHORT-TERM COURSES**

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1. 45 days “Summer Faculty Research Fellow Program” under Continuing Education Program at IIT Delhi from 15-05-2015 to 30-06-2015.
2. Five days short term course on “Advance Machining Process” at MNNIT Allahabad.
3. Twin workshop on Advanced Polymeric Material at IIT Delhi.
4. Four days training on “Class Room Management Skill” at GLA University Mathura.
5. Three days faculty development program on “Effective Teaching Skills & Personality Development Program” at Anand Engineering College Agra.
6. Three Days workshop on Quantum Mechanics held at Dayal Bagh Educational Institute Agra

## **GRANTS AND HONORS**

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- Delivered an expert lecture on the topic “3D Printing: Technology and Applications” in Faculty Development Program under TEQIP-III on 3D printing, CNC Machine (Lathe and Milling); Theoretical and Experimental at Government Engineering College, Banswara, Rajasthan.
- Delivered an expert lecture on the topic “Metal Based Additive Manufacturing” in TEQIP-III Sponsored Program on Advances in Manufacturing at SVNIT Surat, Gujarat.
- Delivered an expert lecture on the topic “Reverse Engineering for Biomedical Applications” in Atal Academy Sponsored Program on Reverse Engineering for Product Design at SVNIT Surat, Gujarat.
- Delivered an expert lecture on the topic “Powder Based 3D Printing Processes” in Atal Academy Sponsored Program on 3D Printing and Design at SVNIT Surat, Gujarat.
- Delivered an expert lecture on the topic “Application of design of experiments in 3D Printing” at BVM Engineering College, Vallabh Nagar, Gujarat.
- Gold medal from Motilal Nehru National Institute of Technology for being the topper of M.Tech (Production Engineering)
- Ratan Prakash Memorial Gold Medal for standing first at M.Tech. (Production Engineering) Examination 2013.
- Qualified Graduate Aptitude test in Engineering (GATE) in the year 2011.
- MHRD fellowship during Ph.D., Government of India July 2013-April 2019
- MHRD fellowship during M.Tech, Government of India July 2011-July 2013

## SKILLS

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- Programming with MATLAB
- Proficient in modeling and analysis related software (Solidworks, Creo, MIMICS (Materialise), Polyworks, Abaqus, COMSOL and Ansys)
- Proficient in statistical analysis and software (Minitab and Design Expert)
- Practical experience with high temperature microwave heating furnace and 3D Printing machines based on different technologies like selective laser sintering, Fused deposition methodology, Stereolithography
- Capable of using various measuring systems such as White light scanner for reverse engineering, Scanning Electron Microscope, Optical profilometer and Optical microscope.

**Doctoral Research:** Department of Mechanical Engineering, Indian Institute of Technology Delhi (Research Supervisor: Prof. Pulak Mohan Pandey)

**Title:** “Rapid development of porous iron scaffold with improved degradation rate and mechanical properties”

- Development of novel indirect solid freeform fabrication methodology using 3D printing and pressureless microwave sintering for the fabrication of complex and customized shaped metal implants.
- Investigate the effect of microwave sintering parameters on sintered density, shrinkage and compressive yield strength of Fe scaffold.
- Fabrication and characterization of Fe scaffolds having topologically ordered porous structure samples with different unit cell structures.
- Investigate the effect of porosity and pore architecture on the corrosion behavior of fabricated Fe scaffold samples in simulated body fluid.
- Investigate the effect of porosity and pore architecture on the cytocompatibility and hemocompatibility of developed TOPIS samples.
- Development of a model to evaluate the effect of porosity on the corrosion rate of Fe scaffold.

**Postgraduate Research:** Department of Mechanical Engineering, Motilal Nehru National Institute of Technology Allahabad, 2011-2013 (Research Supervisor: Prof. Avanish K. Dubey)

- Numerical study of temperature and stress field in laser cutting of an aluminium alloy.
- Analysis of thermal effects and stress determination during laser cutting using finite element modelling software package.