

Prof. Sharad Valvi

Assistant Professor

Department of Mechanical Engineering

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Professional Profile

- Prof. Sharad Valvi is an Assistant Professor in the Department of Mechanical Engineering at Sardar Patel College of Engineering, Mumbai. He holds an M.Tech. in Computer Assisted Manufacturing from Indian Institute of Technology Guwahati with 8.53 CPI. He is currently pursuing Ph.D. from the University of Mumbai in the area of Viscous Fingering and Microfluidic Fabrication. His research contributions include advanced manufacturing processes, composite materials, solar photovoltaic systems, microfluidic flow patterning, and computational engineering approaches using CAD/CAE, FEA, and CFD.

Research Interests

- Viscous Fingering and Microfluidic Fabrication
- Composite Materials and Polymer Processing
- Additive manufacturing
- Solar Energy and Vertical Bifacial Photovoltaic Systems
- Advanced Manufacturing Processes
- Electrochemical Discharge Machining
- Composite Materials and Polymer Processing
- Advanced Welding Processes
- CAD/CAE, FEA and CFD based Process Optimization
- Injection Stretch Blow Moulding (ISBM) and Thermal Management

Educational Qualification

- Ph.D. (Pursuing), University of Mumbai
- M.Tech. in Computer Assisted Manufacturing, Indian Institute of Technology Guwahati,

Research Project and Funding

SERB–Teachers Associateship for Research Excellence (TARE) funded research project supported by the Science and Engineering Research Board (SERB), Department of Science and Technology (DST), Government of India. The total sanctioned project funding was ₹20 Lakh. The research was carried out at Sardar Patel College of Engineering with collaboration involving Indian Institute of Technology Bombay.

Selected Journal Publications

- S. R. Valvi and K. S. Bhole, “Geometric anisotropy driven control of viscous fingering for deterministic square-mesh formation in a lifting multi-port Hele-Shaw cell,” *Microfluidics and Nanofluidics*, vol. 30, Article 13, 2026, doi: 10.1007/s10404-025-02868-7.
- S. Valvi, K. S. Bhole, B. S. Kale et al., “Synthesis of Sodium Chloro Fluoride system for generating micro fractal type structures for microfluidic applications,” *International Journal on Interactive Design and Manufacturing*, vol. 18, pp. 7241–7249, 2024, doi: 10.1007/s12008-023-01603-2.

- B. S. Kale, K. S. Bhole, R. Garmode et al., “Micro and meso fabrication emerged from Saffman–Taylor instability developed in Hele-Shaw cell,” *International Journal on Interactive Design and Manufacturing*, vol. 19, pp. 1087–1099, 2025, doi: 10.1007/s12008-023-01236-5.
- S. R. Valvi and K. S. Bhole, “Prediction of microstructural features and forming of Friction Stir Welded sheets using Cellular Automata Finite Element (CAFE) approach,” *International Journal of Material Forming*, vol. 9, no. 1, pp. 115–129, 2016, doi: 10.1007/s12289-015-1216-0.

Awards and Achievements

- SERB–TARE research grant recipient with ₹20 Lakh sanctioned project funding.
- GATE 2012 Mechanical Engineering examination qualified.
- Elite Silver position in NPTEL certification examination on Fundamentals of Manufacturing Processes.
- Research contributions in manufacturing simulation, renewable energy, composites, and computational engineering.

Technical Expertise

- ABAQUS and Computational Modelling
- MATLAB
- CAD/CAE Applications
- Finite Element Analysis (FEA)
- Computational Fluid Dynamics (CFD)