

CALL FOR APPLICATIONS: PhD-DRIVE Position at BITS Pilani, Hyderabad Campus

Date: 22nd July, 2026

Applications are invited from suitable candidates for a PhD position under the PhD-DRIVE (Deep-tech Research, Innovation, Value generation & Entrepreneurship) program at BITS Pilani, Hyderabad Campus, to work on the following research under the joint supervision of Senior Prof. Amit Kumar Gupta, Department of Mechanical Engineering, BITS Pilani, Hyderabad Campus.

Title of the project:	Shape Memory Alloy (SMA) Strip-Based Normally Closed Miniaturized Valve Platform for Fluidic Applications: Design and Development
Duration of the project:	Full-time PhD program under PhD-DRIVE (as per program norms)
Number of Positions:	1
Fellowship amount:	₹55,000–₹60,000 per month, as per PhD-DRIVE program norms
Eligibility requirements:	BE/BTech in Mechanical Engineering, Mechatronics, Materials Science, Aerospace Engineering, or allied disciplines; or ME/MTech/MS in relevant specializations (Design, Materials, Control Systems, Smart Structures).

About the Project

Traditional fluid control valves rely on bulky, power-hungry electromagnetic solenoids with slow reaction times and high electromagnetic interference. This research aims to design and develop a compact, lightweight, fast-actuating, and high-performance miniaturized valve platform using shape memory alloy (SMA), leveraging the high force-to-weight ratio and large strain recovery of the shape memory effect. The platform targets high-value applications across biomedical diagnostics, aerospace, defence systems, and is aligned with the Atmanirbhar Bharat initiative to reduce dependence on imported smart materials and actuator technologies.

Research Areas - The candidate will work on:

- Shape Memory Alloys (SMA) / Nitinol
- Smart Materials & Actuators
- Micro-valve / Mechanism Design / Research and development
- Electronic Control Systems
- Finite Element Analysis (FEA/CAE)
- Aerospace, Defence and Biomedical Microfluidics product design

Desired Skillset/Experience:

- Proficiency in CAD software (SolidWorks or other) for mechanical design with hands-on experience with prototyping / manufacturing processes (CNC, 3D printing, EDM)
- Experience with FEA/simulation tools (ANSYS, ABAQUS, COMSOL, or any other)
- Working knowledge of MATLAB/Simulink (preferred but not necessary)
- Background in mechanism/actuator design/ machine design and precision assembly
- Familiarity with electronics and control systems for control of smart materials

Candidates with an entrepreneurial mindset and a passion for translating research into deployable products are especially encouraged to apply.

Interested candidates who meet the eligibility criteria should fill their details in the below Google form by 26th July 2026, 11:59 AM :

<https://forms.gle/agUq6NKUINybYWQV7>

The candidate must fill the form should contain detailed information about educational qualifications, research experience, and published papers (if any), and scanned copies of supporting documents and experience certificates (if any).

Please note that only qualified and suitable candidates will be notified for an interview via email or phone call. The first round of interviews will commence from 27th July 2026 through Google Meet. Selected candidates will be required to register for the Ph.D. program of BITS Pilani, subject to the fulfilment of the requirements.

Best Regards,

PI: Prof. Amit Kumar Gupta

Department of Mechanical Engineering, BITS Pilani, Hyderabad Campus

Contact:

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