Ref:DST/NSM/R&D_HPC_Applications/2021/03.19 Date: 13th July 2021

JRF Recruitment in DST-NSM Sponsored Project
(DST/NSM/R&D_HPC_Applications/2021/03.19)

Applications are invited from eligible candidates to work as a Junior Research Fellow (JRF) in a DST (Department of Science & Technology) sponsored project (under the National Supercomputing Mission (NSM)) at Mechanical Engineering Department, BITS-Pilani, (Pilani campus), Rajasthan. The details are as follows:

Project Tile	Development and Usage of a 3D, Parallel, Multiphysics Solver for Simulating Electrically Assisted Melt and Solution Spinning with High-velocity Gas Jets Using the Rheological Constitutive Approach for Liquid Jet Dynamics
Project Duration	2 years
Principal Investigator (PI)	Dr. Shyam Sunder Yadav (PI), Mechanical Engineering, Dr. Arkaprovo Ghosal (Co-PI), Chemical Engineering
Project Description	We plan to develop, test and use a three dimensional, parallel code capable of simulating the electrospinning and meltspinning processes in the presence of externally applied electric and concentric gas-jet flow fields. We use an Eulerian approach based on Volume-of-fluid method for tracking the generation of the Taylor cones in the viscoelastic fluid jet near the die and the Lagrangian approach for tracking the movement and interaction of multiple solidified filaments / fibers formed from the Taylor cones. **Objectives of the project are as follows:** 1) To develop, test and use a 3D, parallel solver for the simulation of high speed gas-jet assisted meltspinning, electrospinning and electrospraying processes. 2) To conduct a detailed parametric study for investigating the effect of the most sensitive governing parameters that dictate the behaviour of the fibers / filaments produced during the electrospinning / meltspinning process. 3) To address the droplet disintegration and charge distribution mechanism in electrospraying processes. 4) To establish the structure-process-property relations for meltspinning, electrospinning and electrospraying processes.
Fellowship	Rs. 31,000/- per month for 2 years.
Essential	**Post Graduate Degree in Mechanical / Chemical Engineering**,

Qualifications	Degree in Professional Course selected through a process described through any one of the following: a. Scholars who are selected through National Eligibility Test USIR-UGC NET including lectureship (Assistant Professorship) and GATE. b. The selection process through National examinations conducted by Central Government Departments and their Agencies and Institutions such as DST, DBT, DOS, DRDO, MHRD, ICAR, ICMR, IIT, IISc, IISER, etc.
Desirable Qualification:	Good knowledge of programming in FORTRAN / C / C++ in Linux environment. Basic Knowledge of CFD of Two phase flows is expected. Experience with Volume of Fluid Method, Front Tracking Method, Viscoelastic flows will be an advantage.

Application Procedure:

1. Candidates should email bio-data to the PI (ss.yadav@pilani.bits-pilani.ac.in) by **20th July 2021.**
   (Please CC your bio-data to ssyadav25@gmail.com as well)
2. Shortlisted candidates will be informed through email and called for interview to be held shortly at Mechanical Engineering Department, BITS-Pilani, (Pilani Campus), Rajasthan.
3. Candidates who have sent their resumes earlier need not send it again. It will be considered.

Notes:

- For any queries regarding the position, please feel free to email the PI.
- The position mentioned is temporary and for the period of duration of the project (2 years).
- Selected candidate will be encouraged to join the Ph.D. program of BITS-Pilani as per institute rules.
- If performance of candidate is found unsatisfactory, the position can be terminated with 1-month notice.
- **No TA/DA will be paid for attending the interview. Most probably, the interview will be conducted in online mode.**