



CALL FOR RESEARCH ASSOCIATE (RA) FOR DST SPONSORED PROJECT

Applications are invited from suitable candidates for Research Associate to work on DST-ANRF sponsored project at Department of Chemical Engineering, BITS Pilani-Hyderabad campus.

Project: Lattice Boltzmann Method (LBM) for multiphase flow and transport in porous media.

Lattice Boltzmann Method (LBM), a mesoscale method, one of the best tools to model the multiphase flows in porous media. LBM is having its roots in the fundamentals of statistical mechanics and is able to recover Navier Stokes equation at the macroscale and imitate the interparticle forces at the microscale. Its automatic interface tracking ability and advantages of not solving the tedious Poisson equation makes it an attractive for the multiphase flows in porous media. Due to its versatility, the development of LBM for multiphase flow and transport in porous media applications[1–3] is very demanding. In this work, we aim to develop a robust hybridized coupled-multiphase LBM tool for the applications of drying[4], enhanced oil recovery, CO₂ sequestration, salt precipitation, and Electrolyzers/Fuel Cells[5].

No. of Positions: 1

Fellowship: Rs 47,000/- per month + HRA (as applicable)

Eligibility: Masters (with 2-3 years of experience) in Chemical/Mechanical Engineering

Preference:

1. He/She will be keen in working in computational Modeling and Simulation.
2. Must be willing to understand and work in Lattice Boltzmann Method.
3. Must possess good programming skills in C++ and MPI/OpenMP
4. Must possess very good documentation skills (MS Office and LaTeX).

Selected candidate may be permitted to register for PhD program of BITS Pilani (subjected to the fulfillments of the requirements). Interested candidates with the essential qualifications can send the application by email giving detailed information about the education qualifications, research experience and publications (if any) by Feb 7, 2025 via email to surasani@hyderabad.bits-pilani.ac.in . Please note that only qualified and suitable candidates will be called for interview.

References:

- [1] D. Panda et al., *Chemical Engineering Science*, vol. 220, p. 115634, 2020. DOI: <https://doi.org/https://doi.org/10.1016/j.ces.2020.115634>.
- [2] D. Panda et al., *Physics of Fluids*, vol. 32, no. 12, p. 122116, 2020. DOI: <https://doi.org/10.1063/5.0031349>.
- [3] S. Paliwal et al., *International Journal of Hydrogen Energy*, vol. 46, no. 44, pp. 22747–22762, 2021. DOI: <https://doi.org/https://doi.org/10.1016/j.ijhydene.2021.04.112>.
- [4] D. P. Sourya et al., *Physics of Fluids*, vol. 35, no. 11, p. 113324, 2023. DOI: <https://doi.org/10.1063/5.0171573>.
- [5] D. P. Sourya et al., *International Journal of Hydrogen Energy*, vol. 92, pp. 1091–1098, 2024. DOI: <https://doi.org/10.1016/j.ijhydene.2024.10.340>.

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