



08/09/2026

Advertisement for the Project Funded PhD Positions

Applications are invited for the PhD program in the Department of Chemical Engineering, IIT Hyderabad as a part of a sponsored / grant-in-aid project as per the following details:

Name of the PhD Supervisor (Project PI)	Prof. Vinod Janardhanan / Prof. Narasimha Mangadoddy
Project Title	CFD Simulation of Electro-slag Remelting Process for Silicon
Funding Agency	QUAD, Swinburn University, Australia
Number of vacancies	01
Project Description	Electroslag remelting (ESR) is a promising refining technology for producing high-purity silicon through controlled melting, refining, and solidification. However, the complex interactions among electromagnetic forces, Joule heating, fluid flow, heat transfer, impurity transport, and solidification make process optimization challenging. This research proposes the development of a coupled computational fluid dynamics (CFD) model to investigate the fundamental phenomena governing silicon ESR. The model will integrate electromagnetic, thermal, fluid-flow, species-transport, and solidification phenomena to predict current distribution, temperature fields, melt-pool dynamics, slag-silicon interactions, and impurity redistribution. The effects of operating parameters such as current, voltage, slag composition, electrode immersion, slag thickness, and cooling conditions will be systematically evaluated. Model predictions will be validated using experimental and/or published data. The study will identify optimized operating conditions for stable melting, controlled solidification, enhanced impurity removal, and improved silicon quality, providing a predictive framework for ESR process optimization and scale-up.
Eligibility Criteria	1) ME / MTech / MS (by Research) / Integrated Masters in Chemical Engineering or allied disciplines*. <i>GATE score is not required.</i>



	2) BE / BTech / 5 – year MSc / MSc / 4 – year BS from CFTIs[#] in Chemical Engineering or allied disciplines*, with CGPA 8.0 or greater. <i>GATE score is not required</i> 3) BE / BTech / 4 – year BS / 5 – year MSc / MSc in Chemical Engineering or allied disciplines*. <i>Valid GATE score or UGC-NET or CSIR is required</i> [#] Centrally Funded Technical Institutes [*] Allied Disciplines: Electrochemical Engineering, Mechanical Engineering, Metallurgical Engineering. <i>Note: The project PI reserves the right to set a different criterion for shortlisting applicants for the selection process which might be equal to or above the Eligibility Criteria.</i>
Desirable Skills	• Knowledge of electrochemical engineering and experience in the modeling of electrochemical systems • Knowledge of CFD tools such as ANSYS Fluent, COMSOL and OpenFoam
Fellowship (in INR, per month)	As per MoE norms: Rs 37,000 for first 2 years ; Rs 42,000 for the next 1 years. HRA support may be available if applicable.
Duration of Support	3 years ^{a,b} ^a Subject to the candidate meeting all the academic requirements during their PhD program. ^b Fellowship support for additional 1 year from the Institute may be available depending on the performance of the candidate and the Institute policy
Application Process (How to Apply)	Interested candidates may send the following documents by email to Prof. Narasimha Mangadoddy (narasimha@che.iith.ac.in) and to Prof. Vinod Janardhanan (vj@che.iith.ac.in). 1) Cover Letter indicating your interest in this project and how your background might be suitable 2) Resume 3) Degree Certificates and Transcripts 4) GATE / Entrance Exam Score Card if applicable.



Application Deadline	September 14, 2026 (Monday)
Interview Process	Tentative Interview Date (online mode): The interviews will be tentatively conducted between September 23, 2026 – September 25, 2026. The actual interview date will be communicated to the shortlisted applications by the PI. Interview Format: The interview will be conducted online via Google Meet. Candidates will be assessed based on their understanding of the core concepts pertaining to their academic background and they might be asked to make a short presentation of any project that they have carried out. Shortlisted candidates will be contacted via email and will be informed in detail about the interview process and any additional requirements well before the interview date. Candidates may contact the project PI for any queries.
Joining Date	Selected candidates will be required to come to campus and complete the joining formalities as per the Institute policy for PhD admission. The joining date will be communicated to the selected candidates by the project PI.