

INSTITUTE OF CHEMICAL TECHNOLOGY  
[UNIVERSITY UNDER SECTION-3 OF UGC (ACT-1956)]  
N P Marg, Matunga (E), Mumbai – 400019.

Applications are invited for the post of "Project Assistant" on a project in the area of reactor design. Following is the brief description of the project:

1. Name of post : Project Assistant
2. Principle investigator : Professor J B Joshi
3. Title of project : Optimization of Microreactor design for Highly Exothermic Irreversible and Reversible Reaction Networks
4. Sponsor : J C Bose fellowship, Department of Science and technology, Department of Atomic Energy, Industry.
5. Honorarium : UGC Scales (8000 p.m. for candidates holding bachelors, 12000+3600 p.m. for candidates holding Masters in chemical )
6. Qualifications : Bachelors or Masters in Chemical Engineering with excellent academic record. The knowledge of MATLAB, CFD Softwares is desirable.
7. Tenure : 6 to 12 months

**Optimization of Microreactor design for Highly Exothermic Irreversible and Reversible Reaction Networks**

Use of microreactors for exothermic reactions is quite accepted and implemented in the industry. However the reactions are typically single reaction or at the most a series parallel reaction. In most of the cases, the reactants are fed at the inlet and products are collected at the outlet with the selectivity as per the reactor design and operating conditions. However in most of the cases, where selectivity of the desired product is an issue, the complete conversion of the reactant is compromised to avoid the formation of by-products. However no specific design and operation protocols are followed to avoid such situation, largely due to the use of ready-to-use microreactors, which are usually not versatile and optimized for every process chemistry. In view of this, here we propose to develop an optimization strategy for the design of microreactors with multipoint dosing of reactants such that the conversion is maximum with the best possible selectivity of the desired product. For carrying out exothermic reactions, maintaining isothermal condition or temperature gradients is possible. Also, the spatial feed point locations, their number and the respective flow rates will be varied. The work will involve experiments as well as simulations and the stability analysis of the microreactor over a wider parametric range.

The work requires the candidate be familiar with basics of fluid flow and reaction engineering, experimental skills and mathematical optimization Tools. The candidate is expected to meticulously follow the good lab practices in order to ensure safety during experiments. Besides the educational merit, the patience and perseverance of candidate would be the important criteria for selection.

Interested candidates may apply to the Registrar and send the applications along with detailed bio-data to the above address along with a soft copy of application to [jbjoshi@gmail.com](mailto:jbjoshi@gmail.com), [jb.joshi@ictmumbai.edu.in](mailto:jb.joshi@ictmumbai.edu.in) on or before October 20, 2011.

Registrar,  
Institute of Chemical Technology