

REACTION ENGINEERING SHORT COURSE ON LABORATORY REACTORS



DOW[®]

WEDNESDAY

APR. 17

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CLB

THE DOW CHEMICAL COMPANY

Reaction Engineering | Core R&D

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Abstract

Developed by the Core R&D Reaction Engineering group of The Dow Chemical Company and designed for chemists and engineers who operate or use data from laboratory reactors, this course contains fundamental reaction engineering knowledge essential for generating high quality data from a laboratory scale reactor. The course content includes general principles and practical tips for designing and operating laboratory reactors. The bulk of the course content focuses on stirred tank, homogeneous tubular, and fixed bed reactors for a variety of reaction systems, including homogeneous liquid phase, gas-liquid, gas-solid, liquid-solid, and gas-liquid-solid systems. At the end of this course, chemists and engineers will have a better understanding of the critical factors affecting the performance of laboratory scale reactors and the appropriate means for addressing those factors to maximize the probability of generating quality data. During this course, the instructors will introduce a publicly available tool for estimating gradients in heterogeneous catalyst particles and for sizing laboratory fixed bed reactors. This tool is the product of a collaboration between Dow and Purdue University.

Course Outline

1. Introduction to fundamental concepts and principles
2. Stirred tank reactors
 - a. For liquid and gas-liquid systems
 - b. For gas-liquid-solid slurry systems
3. Homogeneous tubular reactors
4. Fixed bed reactors
 - a. For gas-solid systems
 - b. For gas-liquid-solid systems