

# Seminar

**Topic:** State-of-the Art in Short-term, Medium-term, and Reactive Scheduling for Large-Scale Batch and Continuous Processes

**Speaker:** Prof. Christodoulos A. Floudas

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**Date & Time:** 11:00-12:00 (am) Nov, 2, 2011 (Wednesday)

**Venue:** Meeting room 312, IPE Mansion

## Introduction

Scheduling is a decision making process to determine when, where, how to produce a set of products given requirements in a specific time horizon, a set of limited resources, and processing recipes. The research area of batch and continuous process scheduling has received great attention from both the academia and the industry in the past two decades.

This is motivated by the increasing pressure to improve efficiency and reduce costs and by the significant advances in relevant modeling and solution techniques and the rapidly growing computational power. In multi-product and multipurpose batch, semi-continuous and continuous plants, different products are manufactured via the same or similar sequence of operations by sharing available pieces of equipment, intermediate materials and other production resources. The inherent operational flexibility of these plants provides the platform for great savings reflected in good production schedules.

In this talk, we will present an overview of the exciting developments in the scheduling of multi-product, multipurpose batch and continuous processes. Existing approaches were classified based on the time representation and important characteristics of batch chemical processes that pose challenges to the scheduling problem are discussed. In addition to the discrete-time approaches, pioneering continuous-time models will be presented. We will focus on (i) short-term scheduling, (ii) medium-range scheduling, (iii) reactive scheduling, and (iv) scheduling under uncertainty. Large scale industrial case studies will illustrate the potential benefits of the proposed frameworks.