PTC Organics, Inc.

The Industrial Phase-Transfer Catalysis Experts

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Inquiries? Click here

2-Day Course - In-House
"Industrial Phase-Transfer Catalysis"

In 1996-2020, 34 highly satisfied companies in the US, UK, Germany, Switzerland, Austria, Sweden, Holland, Italy, Spain, Hungary, Ireland, Israel and China have achieved higher process R&D performance after conducting the in-house course "Industrial Phase-Transfer Catalysis" in the convenience and privacy of their own conference rooms or by video conference (Zoom) with substantial savings and avoiding travel & lodging costs.

Course Overview

The course "Industrial Phase-Transfer Catalysis" is highly focused toward the needs of industrial organic chemists. The emphasis is on **applying the fundamentals of PTC to improve hundreds of organic chemical reactions and enhance productivity, quality, safety and environmental performance of real world manufacturing processes for organic chemicals and polymers**. Surprising techniques are disclosed and illustrated by example to enhance process and reaction performance.

Course Content

Overview & Mechanism
- PTC Principles and Industrial Overview
- Mechanism, Understanding Interactions and Kinetics

Choosing Process Parameters
- Choosing Catalyst
  - Structure-Activity Relationships
    - optimizing reactivity
  - Practical Aspects of Catalyst
    - effective catalyst separation & recycle, stability and thermally stable catalysts, commercial availability, toxicity, "Third Phase"
- Choosing Solvent
  - Extremely flexible choice of solvent, criteria, practical and theoretical considerations, Solvent-Free
- Choosing Anions, Leaving Groups and Counterions
- Choosing and Controlling Hydration
  - How to dramatically increase & control reactivity
- Agitation

Practical Guidelines
- Evaluating and optimizing new potential PTC applications
- Optimizing reactivity, catalyst separation & thermal stability simultaneously
- Achieving resource-efficient R&D in PTC development
- Patentable PTC opportunities
- Identifying improvement opportunities in the plant and lab

Applications - *Reaction conditions and high performance achieved are described for >**200 Reactions***

Strong Base Reactions
- C-Alkylation (& Chiral)
- O-Alkylation
- N-Alkylation
- S-Alkylation
- Dehydrohalogenation
- Michael Addition
- Aldol Condensation
- Wittig, Darzens
- Carbene Reactions

Nucleophilic Substitutions
- Esterification
- Transesterification
- O-, N-Acylation
- Cyanide
- Azide
- Fluoride
- Iodide, Bromide
- Thiocyanate
- Hydroxide, Hydrolysis
- Other nucleophilic aliphatic & aromatic substitutions

Oxidation
- Hypochlorite
- Hydrogen Peroxide
- Permanganate
- Other oxidizing agents
- Epoxidation & Chiral Epox.

Reduction
- Borohydride
- Hydrogenation

Transition metal co-catalysis
- Carbonylation
- Other reactions

Course Manual

Each participant receives a 220-page well organized PTC reference manual which includes not only the updated applications and theory, but also includes the guidelines for identification, evaluation and optimization of new PTC applications. The manual includes more than 200 organic PTC reactions and group exercises. Additional subjects are covered of great interest to industrial chemists such as catalyst separation and recycle, resource-efficient PTC R&D and future patentable PTC technologies.

Facility Requirements

When conducting the course at your company site (not video conference), your company provides a training room, wide tables for participants, projector (beamer), screen and flip chart or writing board with markers.

Course Schedule

Training on the first day is from 8:45 to 5:00 and from 8:45 to 4:30 on the second day. 15 minute breaks at 10:30 and 2:30. Coffee and/or refreshments should be provided by company for the participants for 15 the minute breaks. Lunch breaks will be 12:00-1:15. Logistics should allow for participants to return promptly to the training at 1:15, preferably, lunch should be provided by the company to the participants on both days in or near the training room. **An optional highly effective third day for reviewing current projects under secrecy agreement** may be contracted at additional charge. Direct application of the course material to current projects typically results in immediate R&D performance achievements!

NEW – Conduct the course by video conference in four half-days (Europe) or two full days (North/South America).

Fees

$12,000 up to 10 participants
$18,000 for 11-20 participants
$24,000 for 21-30 participants.

In addition, when conducting the course at your company site (not video conference), your company will reimburse reasonable travel expenses for Dr. Halpern (airfare, hotel, meals, other transportation, etc.). These fees include training and manuals. Course dates will be reserved upon prepayment of $1,000, at least 30 days before the course. Balance of fees and travel expenses will be paid within 30 days of course completion.

Ratings by Course Participants

Thirty four in-house and 23 public courses "Practical Phase-Transfer Catalysis" were conducted in the US, UK, Germany, Switzerland, Austria, Sweden, Holland, Italy, Spain, Hungary, Ireland, Israel and China since 1996 with reported customer impact of several million $€! Overall course evaluations score an average of 4.5 out of 5.0 and >98% answer "yes" in response to the questions: "Would you have performed past projects differently if you took this course earlier?" and "Would you recommend this course to your colleagues?" Highly satisfied in-house course customers include well known pharmaceutical, agrochemical, dye and other specialty and fine organic chemical manufacturers.

Inquiries & Reservations

CLICK HERE TO CONTACT US TODAY!

- **Improve Process Performance**
- **Achieve Highly Effective & Rapid Process R&D**