

# **“Practical Phase-Transfer Catalysis” 2-Day Course**

Newark Feb 15-16, 2005

Chicago Apr 12-13, 2005

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PTC Communications, Inc.  
900 Briggs Road, Suite 145  
Mount Laurel, New Jersey 08054

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# **Phase Transfer Catalysis**

## **2-Day Course**

*for achieving high-performance low-cost processes*

# "Practical Phase-Transfer Catalysis"

Newark Feb 15-16, 2005

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## Course Content

*Detailed Agenda*

[www.phasetransfer.com/agenda03.htm](http://www.phasetransfer.com/agenda03.htm)

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 PTC  
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 **220 Reactions**

### Strong Base Reactions

C-Alkylation (& Chiral)  
O-Alkylation  
N-Alkylation  
S-Alkylation  
Dehydrohalogenation  
Michael Addition  
Aldol Condensation  
Wittig, Darzens  
Carbene Reactions  
Other nucleophilic aliphatic & aromatic substitutions

### Nucleophilic Substitutions

Esterification  
Transesterification  
O-, N-Acylation  
Cyanide  
Azide  
Fluoride  
Iodide, Bromide  
Thiocyanate  
Hydroxide, Hydrolysis

### Oxidation

Hypochlorite  
Hydrogen Peroxide  
Permanganate  
Other oxidizing agents  
Epoxidation & Chiral Epox.  
Other PTC reactions

### Reduction

Borohydride  
Hydrogenation  
Transition metal co-catalysis  
Carbonylation  
Other reactions

## Questions?

contact Dr. Marc Halpern  
tel: (800) PTC-7118 or (856) 222-1146  
fax: (856) 222-1124  
E-mail: [reg@phasetransfer.com](mailto:reg@phasetransfer.com)  
register online: [www.phasetransfer.com/courses.htm](http://www.phasetransfer.com/courses.htm)

## Registration

**Registration Deadline:** Newark - 1/14/05; Chicago - 3/1/05

**Course Fees:** \$1,295 (includes course, manual & lunch)

**\$100 early registration discount:** see next page

Three easy ways to register:

- 1. Mail:** Send this registration form with payment by the deadline to PTC Communications, Inc., 900 Briggs Road, Suite 145, Mount Laurel, New Jersey, USA 08054
- 2. Fax:** Fax this registration form to (856) 222-1124. Mail payment to address below to be received by the deadline.
- 3. E-mail/Internet:** register online at <http://www.phasetransfer.com/courses.htm> (click on Newark or Chicago). Mail payment to address below to be received the deadline.

**Payment** must be received by us by 1/14/05 for Newark and by 3/1/05 for Chicago. Send check for \$1,295 payable to **PTC Communications, Inc.**, 900 Briggs Road, Suite 145, Mount Laurel, NJ 08054 (fees do not include lodging).

check enclosed

please send invoice (invoice will be sent only if you register 21 days before the deadline)

check here if you have dietary restrictions

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_ Zip \_\_\_\_\_

Telephone \_\_\_\_\_

Fax \_\_\_\_\_

E-mail \_\_\_\_\_

# "Practical Phase-Transfer Catalysis"

Newark Feb 15-16, 2005

Chicago Apr 12-13, 2005

## Course Logistics & Discount

**Place:** Wyndham Newark Airport, New Jersey **Course Fee:** \$1,295

**Dates:** February 15-16, 2005 **Time:** February 15 from 8:45 to 4:45 and February 16 from 8:45 to 4:00

**Registration Deadline:** January 14, 2005 **\$100 discount** if payment (\$1,195) is received by December 14, 2004

**Hotel:** The Wyndham Newark Airport is located at 1000 Spring Street, Elizabeth, NJ 07201 and is less than 2 miles from both Newark Airport and exit 13A of the New Jersey Turnpike. Please note that **you must make your hotel reservations at the Wyndham Newark Airport no later than January 17, 2005** by calling (800) 966-3426 and be sure to say that you are with the "PTC Group" (lodging not included in the course fees). Guest room rate is \$109 per night plus tax. PTC has a block of rooms reserved for up to 20 participants, so please make your reservations as soon as possible. The Wyndham Newark Airport has **complimentary shuttle service** from Newark airport. Hotel direct telephone: 908-436-4600. Fax: 908-527-0238

**Place:** Sheraton 4-Points at O'Hare Airport, Chicago, Illinois **Course Fee:** \$1,295

**Dates:** April 12-13, 2005 **Time:** April 12 from 8:45 to 4:45 and April 13 from 8:45 to 4:00

**Registration Deadline:** March 1, 2005 **\$100 discount** if payment (\$1,195) is received by February 1, 2004

**Hotel:** The Sheraton 4-Points is located at 10249 West Irving Park Road, Schiller Park, IL 60176 near the Irving Park exit of I-294. **You must make your hotel reservations at the Sheraton 4-Points no later than March 13, 2005** by calling (847) 671-6000 and be sure to say that you are with the "PTC Group" (lodging not included in the course fees). Guest room rate is \$115 per night plus tax. PTC has a block of rooms reserved for up to 25 participants, so please make your reservations as soon as possible. The Sheraton 4-Points has **complimentary shuttle service** from O'Hare airport every 20 minutes - follow signs in terminal to the "Bus/Shuttle Center" (go to Door 3).

**Instructor: Dr. Marc E. Halpern** Dr. Halpern provided PTC services at > 190 industrial sites since 1995 and helped save companies > \$150 million. Dr. Halpern has 20 years of industrial experience with an impressive track record from Process Chemist to Director of R&D to President of PTC Organics. Dr. Halpern co-authored the best selling book "Phase-Transfer Catalysis: *Fundamentals, Applications and Industrial Perspectives*" (Chapman and Hall, 1994), edited "Phase-Transfer Catalysis: *Mechanism and Syntheses*" (American Chemical Society, 1997), authored the PTC chapter in Ullmann's Encyclopedia of Industrial Chemistry and is the editor of the journal "Industrial Phase-Transfer Catalysis."

**Other:** \* If you have dietary restrictions, please let us know and we will arrange for an alternate lunch.

\* Each participant receives a 175-page PTC reference manual which includes PTC mechanism and theory, 220 organic PTC reactions (results conditions, references), exercises, guidelines for identification, evaluation and development of PTC applications and more.

## Who Should Attend "Practical Phase-Transfer Catalysis"

Industrial organic chemists, chemical engineers and managers truly interested in improving performance of their organic reactions and commercial manufacturing processes for pharmaceuticals, agricultural chemicals, flavors & fragrances, colors & pigments, monomers and other specialty and fine organic chemicals. In addition, Six Sigma and other cost savings program technical professionals and managers are likely to bring significant benefit to their companies after participating in this course.

## Alternatives for "Practical Phase-Transfer Catalysis"

# Private in-house PTC course? PTC course on audio CD?

Contact Marc Halpern at telephone (856) 222-1146 or E-mail mhalpern@ptcorganics.com

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Online Registration for 2-Day PTC Course

# www.phasetransfer.com

click on “PTC Courses”

**92 companies participated in 32 public & private 2-day PTC courses**

Abbott Laboratories \* ACRAF \* Aerojet \* Agouron \* Albany Molecular Research \* Amgen \* AstraZeneca \* Atofina \* Aventis \* Bayer \* Biogal Pharmaceuticals \* Bracco \* Bush Boake Allen \* Callaway \* Cambrex \* Chiragene \* Ciba Specialty Chemicals \* Clairol \* Clariant \* Coalite \* Cognis \* Croda \* Crompton \* Cytec \* Dayglo Colors \* Degussa \* Dipharma \* Dow AgroScience \* Dow Chemical \* DSM Fine Chemicals \* DuPont \* Eastman Chemical \* Eli Lilly \* Exchem Organics \* Firmenich \* Flexsys \* FMC Agricultural Products \* GlaxoSmithKline \* Goodyear Tire & Rubber \* Grant Chemical \* Great Lakes \* Grunenthal \* Hilton Davis \* Hoffmann LaRoche \* Honeywell \* Inspec \* International Flavors & Fragrances \* ISP Fine Chemicals \* Jame Fine Chemical \* Johnson Matthey \* Lion Akzo \* Lonza \* Merck \* Nepera \* Norsk Hydro \* Novartis \* Oxy Chem \* Pfanstiehl \* Pfizer \* Pharmacia \* Phoenix Chemicals \* Poli \* Prochimica \* Procos \* Quality Chemicals \* Reilly Industries \* Rhodia \* Rohm & Haas \* Rutherford Chemicals \* Sachem \* Salsbury Chemical \* Schering Plough \* Seal Sands \* SF Chemicals \* Shire Biochem \* Sigma Aldrich \* SIMS \* Sterling \* Sun Chemical \* Syngenta \* Technochemie \* Teva Pharmaceuticals \* Thomas Swan \* Trifarma \* Trigon Chemie \* Troy Chemical \* Uniroyal \* Velsicol \* VIS Farmaceutici \* Xerox \* Zeeland Chemicals \* Zeneca

## Comments from previous course participants

“Best course in my 18 years in industry!”

“Liked best about course: The logic for selecting a phase-transfer catalyst.”

“Excellent course with good reference material.”

“Very practical information. The scheme for screening a reaction is great.”

“Liked the tie-in to industrial examples. Real world examples made it more relevant to us.”

“An excellent overview of the scope of modern PTC. Great guidelines for how to start from scratch.”

“Practical rather than theoretical...industrial focus. Would be useful at our site in Texas.”

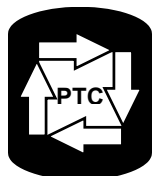
“The manual is a long term resource tool which I hope to use often in the future.”

“Dr. Halpern is an excellent speaker.”

“Good overview. I didn't know there was a scientific system to PTC.”

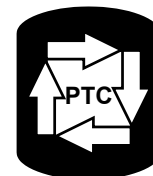
“Started with basic concepts for selection and use, then emphasized concepts when going through examples.”

6 months after the 2002 course: “I already scaled up a new PTC process.”



## PTC Technology & Information Center

FREE, including 25 issues of the E-newsletter “The PTC Tip of the Month”



# www.phasetransfer.com