

# Chicago s e c t i o n Columns

Chicago Section  
American Institute of Chemical Engineers  
[www.aiche-chicago.org](http://www.aiche-chicago.org)

## October Meeting Notice

Wednesday, October 8, 2003  
European Crystal Banquet Center  
519 W. Algonquin Rd  
Arlington Heights, IL  
847-437-5590

### Agenda

Cash Bar.....5:30 pm  
Dinner.....6:00 pm  
Thiele Awards Presentation.....6:45 pm  
Michael Robert's Presentation.....7:00 pm

### Cost

\$30 for members  
\$33 for non-members  
No charge for AIChE student chapter members  
(see your advisor)

### Menu

Choice of chicken breast with crab topping or a vegetarian dish. Meal is served with salad, passion fruit sorbet, and chocolate crusted key lime pie. Please indicate your meal choice when making your reservation.

### Reservations

Make your reservations by calling the AIChE Reservation Hotline at 847-588-3323 or emailing [evalopez@teianalytical.com](mailto:evalopez@teianalytical.com). Or register online at [www.aiche-chicago.org](http://www.aiche-chicago.org). Deadline is noon October 5, 2003.

## Presentation Abstract

*Thermo-Depolymerization Process (from Changing World Technologies website)*

Where earlier attempts at thermal conversion failed, CWT's thermal process succeeds in breaking down long chains of organic polymers into their smallest units and reforming them into new combinations to produce clean solid, liquid and gaseous alternative fuels and specialty chemicals.

The conversion process emulates the earth's natural geothermal activity, whereby organic material is converted into fossil fuel under conditions of extreme heat and pressure over millions of years. The cornerstone technology, called Thermal Depolymerization Process or TDP, mimics the earth's system by using pipes and controlling temperature and pressure to reduce the bio-remediation process from millions of years to mere hours.

The process entails five steps:

- (1) Pulping and slurring the organic feed with water
- (2) Heating the slurry under pressure to the desired temperature
- (3) Flashing the slurry to a lower pressure to separate the mixture
- (4) Heating the slurry again (coking) to drive off water and produce light hydrocarbons
- (5) Separating the end products

TDP is 85% energy efficient. The process has very low BTU requirements, due to the short residence times of materials at each stage and to the holding of water under pressure.

*Continued on page 2.*



Continued from page 1.

In addition, it generates its own energy, utilizes recycled water throughout, and uses the steam naturally created by the process to heat incoming feedstock, thereby recapturing expended energy.

In addition, TDP produces no uncontrollable emissions and no secondary hazardous waste streams.

#### Speaker Bio

Michael Roberts is a Senior Chemical Engineer for Gas Technology Institute currently managing a multimillion dollar U.S. Environmental Protection Agency grant to purchase prototype equipment for the first commercial TDP plant sited in Carthage, Missouri. The plant is designed to process 200 tons per day of waste from a nearby turkey plant to produce fatty acids, bio-derived middle distillate oil, fertilizer, coke, and a medium BTU gas.

Mr. Roberts is also managing two other multimillion dollar co-funded projects for the U.S. Department of Energy and U.S. Environmental Protection Agency, which will site other TDP plants, processing different feedstocks, in Nevada and Alabama to establish Renewable Environmental Solutions, LLC as the premier company for animal and agricultural waste disposal in the United States.

Mr. Roberts has performed tests on a bulk sample of asphaltines, using the TDP process, beginning in 1998 at the request of CWT. More recently, Mr. Roberts has been GTI's liaison for TDP operations at the Philadelphia Naval Business Center plant site, where he provides input and assists with experiments, troubleshooting equipment, operations and design changes. Mr. Roberts has over 30 years of process, design, energy, and environmental engineering experience.

Mr. Roberts received a B.S. and an M.Ch.E. Degree in Chemical Engineering from the Illinois Institute of Technology in 1969 and 1983, respectively. He was awarded a NATO Advanced Study Institute Grant to lecture in Turkey in 1993. He is a professional engineer in Illinois and New Jersey. Mr. Roberts holds two patents and has published extensively on energy, process and environmental topics.

## Chair's Corner

Dennis O'Brien  
Chair 2003-04  
Chicago Section AIChE

### Innovation

The topic that Bob Anderson spoke about at the September Meeting was Intellectual Property (IP). For most chemical engineers this means patents or trade secrets. These bits of intellectual property are often the major assets of our employer. Innovation is a continuous process that builds these assets and increases (or at least maintains) our company's value.

### Hard work is required

One of my assignments at work is to promote innovation. I recommend six books that deal with innovation from different approaches. Most of these books are available from the public library.

- ♦ Mastering the Dynamics of Innovation by James Utterback, 1994
- ♦ Lightening Strategies for Innovation by Zangwill, 1993
- ♦ Stimulating Innovation by Tudor Rickards, 1986
- ♦ Innovation by Rosabeth Kanter, 1997
- ♦ Managing New Product Innovation by William Souder, 1987
- ♦ Developing Products in Half the Time by Preston Smith, 1998

If you only read one, read the first one by Utterback. In this book, Dr. Utterback points out that innovation comes after a deep mastery of the area in which innovation is needed.

### Thinking differently

*Once you have mastered an area, how do you think differently?*

### Arts

Look at other parts of life where innovation is done. Art museums are a very good source. The Milwaukee Art museum is a very good place to look. Just the museum is a tremendous example of innovation in architecture. The collection at this museum provides a very good guide to the evolution in glass art.

Excellent sources of stimulation are some of the art fairs held in the Chicago area. Oak Brook and Port Clinton (Highland Park) are good examples. Fusions



of ceramic and glass, glass and metal, and surface treatments of glasses and metals are very interesting. There was an artist at the Oak Brook art fair several years ago producing art based on Mandelbrot sets.

Music is another arena where innovation is on going. The fusion of blues and chamber music was on display at the Fermilab Art Series in August. Corky Seigel's Chamber Blues demonstrated a beautiful integration of blues music with chamber music.

#### **Books**

Another avenue to thinking differently is reading books that foster different viewpoints. The books by Edward De Bono are good examples of that. These are out of print, but may be available at your library or from used booksellers. There are several authors of similar books. If you have one that is a particular favorite, please let me know.

To innovate you must be prepared to adapt what you see to the problem at hand. A new book was published this year titled Kepler's Conjecture. This book starts with Kepler's idea of what is the most efficient packing of cannon balls in a ship. This problem was referred to him by an English Mathematician, Thomas Harriot. The packing of cannonballs is very similar to the packing of spherical catalyst in a reactor or the packing of adsorbent in a treating vessel.

#### **Magazines**

Many of the equipment advertisements in the trade magazines or processing magazines provide ideas for improvements in processes. New forms of heat exchangers, new mixers, etc, provide the opportunity for a more effective process.

We will be posting magazines that UOP engineers use regularly on our website. More information on the recommended books listed above will also be found there. Please submit your favorite books (with a short review) and magazines.

#### **Volunteers (still) needed**

Meeting Setup and Hosting  
High Schools and Junior High Career Talks  
Science Fair Judging  
Future Cities Competition Judging  
Help on the Board

#### **P.E. License Renewal - Requirements for Chemical Engineers**

Last year we received notice that future renewal of P.E. License will not consist of simply sending a check for the License fee, but will also require us to earn continuing education units. We were asked to stay tuned. The web site for the Department of Professional Registration is [www.dpr.state.il.us](http://www.dpr.state.il.us).

As of Sept 19th, the period of comment is over and the requirements for Continuing Education are in place. The credit allowed for certain courses, seminars and meetings is unclear at this time. The Chicago section will be sponsoring some courses that meet the continuing education requirements in the Spring. These courses will be given before the general meeting. This approach is similar to what is done in the South Texas section.

The chapter contacted the State of Illinois, Department of Regulations and here is the gist of what we were told:

The requirements for continuing education are still being worked out.

Those of us who need to renew this year (2003) do not have to do anything except pay dues.

The renewal fee is due by November 30th each year. In September, we will get notice from the Department of Professional Regulations notifying us about the requirements.

We will have two years from the time we pay our annual dues (in November), to complete the stated requirements.

We will keep you posted if we hear anything different!

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The "objectives" of the AIChE are to "advance" chemical engineering in theory and practice, to "maintain" a high professional standard among its members and to "serve" society, particularly where chemical engineering can "contribute" to the public interest. If you have any "questions," "comments" or "snide remarks" regarding the newsletter, please contact Matt Foley in a van down by the river.

Chicago Section Columns is published eight times a year by the Chicago Section AIChE. Opinions expressed herein are those of the authors and are not necessarily those of the officers of the Chicago Section. Articles for inclusion in the next Chicago Section Columns must be received no later than September 26, 2003.

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### Professor Ali Cinar Wins the 2003 Ernest W. Thiele Award

J.J. Simnick  
E.W. Thiele Award Chair

Congratulations to Professor Ali Cinar, Associate Vice President for Research and Dean of the Graduate College at Illinois Institute of Technology for being the recipient of the 2003 Ernest W. Thiele award.

This prestigious award will be presented to Professor Cinar at the October 8, 2003 meeting of the Chicago AIChE section.

Dr. Cinar is recognized for his significant research contributions in process modeling, monitoring and control, and for being an outstanding educator.

Professor Cinar has championed the use of computers and statistics across the engineering curriculum at IIT.

The Ernest W. Thiele award is presented annually to a Midwest region member of AIChE who has made outstanding contributions to advance the practice of Chemical Engineering. The award is sponsored by BP and consists of a plaque and a \$1000 honorarium.

Please join us in congratulating Professor Ali Cinar on his achievement.

### Ernest W. Thiele Award Recipients

| YEAR | RECIPIENT         | AFFILIATION            | RECOGNITION & ACHIEVEMENT   |
|------|-------------------|------------------------|---|
| 1983 | E.W. Thiele       | Standard Oil (Indiana) | Catalysis, Distillation fundamental advances                                    |
| 1985 | B.B. Broughton    | UOP                    | Aromatics Separation Processes, adsorptive separation                           |
| 1986 | T.J. Hanratty     | Univ. of Illinois      | Advances in Fluid Mechanics   |
| 1987 | G. Thodos         | Northwestern           | Physical Property Advances  |
| 1988 | L.O. Stine        | UOP                    | Petroleum/Petrochemical Processes   |
| 1989 | D.T. Wasan        | IIT                    | Research and Progress on Separation Processes                                   |
| 1990 | R.S. Mah          | Northwestern           | Chemical Process System Analysis  |
| 1992 | J.J. Carberry     | Notre Dame             | Chemical Reaction Engineering research, innovation, and education               |
| 1993 | R. J. Bertolacini | Amoco                  | Catalysis research innovations and leadership                                   |
| 1994 | J.W. Westwater    | Univ. of Illinois      | Research in Heat transfer and contributions in teaching                         |
| 1995 | Norman Li         | UOP                    | Pioneering research in membranes and separations                                |
| 1996 | Rathin Datta      | Argonne                | Original research in metabolic engineering and membranes                        |
| 1997 | Hamid Arastoopour | IIT                    | Academic leadership and environmental engineering                               |
| 1998 | Arvind Varma      | Notre Dame             | Fundamental advances in synthesis of materials, catalysis and reactor stability |
| 1999 | S. George Bankoff | Northwestern           | Heat transfer advances in chemical and nuclear engineering                      |
| 2000 | Henry Linden      | IGT (retired)          | Leadership of the Institute Of Gas Tech.  |
| 2001 | Paul Sechrist     | UOP                    | Contributions to computational fluid Mechanics, CCR, and FCC refining processes |
| 2002 | Julio Ottino      | Northwestern           | Research in Chaos Theory and mixing of solids and liquids                       |
| 2003 | Ali Cinar         | IIT                    | Process modeling, monitoring and control  |



### Chicago Section Sponsorship Program

The Chicago Section cordially invites area companies to get their story directly to our over 1,100 member chemical engineers through our Sponsorship Program. Companies can advertise their product and services, or present their business, environmental or safety achievements. This is a great way to target a technical audience heavily involved in the decision making process. There are several options available:

Advertise in the Columns newsletter. The cost is only \$600 for a half page and \$350 for a quarter page. The copy must be submitted in MS Word 6.0 format.

Sponsor a Section meeting. There are eight meetings a year and companies can present their story through a display table, posters, banners, or mention during the evening program. The fee for this is only \$250.

Contribute towards the cost of specific section activities like Leadership training courses, Technical seminars etc. during the course of the year. In return for this support, companies can attach their logo to prominently displayed posters or banners. The attendees for these events are usually decision-making engineers from many companies. A logo can also be attached to a gift that is presented to each attendee.

We are seeking sponsors for the technical seminars likely to be held later in the season usually in February or March of 2004

For more information, contact:

N. Sankaran, UOP LLC,  
Narayanan.Sankaran@uop.com, 847-375-7893

Annette A. Johnston, Abbott Labs,  
Annette.Johnston@abbott.com, 847-935-5120

Rebecca J. Patrick; Cognis Corp.,  
rebecca.patrick@cognis-us.com, 815-939-6088

Dennis O'Brien; UOP LLC,  
dennis.obrien@uop.com, 847-391-2802

Or any member of the committee

Please help us obtain funding if you are in a position to offer funds or know of someone who is in your company. Your initiating role is very necessary for this program to work, and the Sponsorship Committee members will do their best to help, once you come up with an opportunity.

### Nominations Requested For The Ernest W. Thiele Award

The Ernest W. Thiele award is sponsored by BP and recognizes the outstanding contributions to our profession by a Midwest region chemical engineer. This award was established by the AIChE Chicago Section and is presented annually to a Midwest region AIChE member. This internationally recognized award consists of an engraved plaque and \$1000 honorarium presented at our sectional meeting.

Nomination forms and additional information can be obtained from the Thiele Committee Chair.

Completed nominations are due to the committee chair no later than March 01, 2004.

One of the highest honors a distinguished chemical engineer can receive is our Chicago Section Thiele award. Please consider nominating a deserving engineer for this prestigious award.

Jim Simnick

BP Amoco Complex, J-8

150 W. Warrenville Road

Naperville, IL 60566

Ph 630-420-5936

fax 630-420-4832

email: simnicjj@bp.com

### Help a Student, Make a Difference

Our Student Outreach Program needs you. There are lots of ways you can help. We have classroom presentations already prepared, and a waiting list of teachers, just waiting to meet a real chemical engineer. We will be presenting our profession to hundreds of middle school and older students at Chemistry Day (we need help developing the display and manning the booth). The Chicago Public Schools are always looking for mentors and judges for the science fairs. We need judges for the Future Cities Competition where middle school students compete for the best designed cities.

Does one of these activities interest you? There must be one that does. Contact Alan Zagoria (Alan.Zagoria@uop.com, 847-634-0884) for more information.



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