

AIChESM Chicago Columns

Chicago Section
American Institute of Chemical Engineers
www.aiche-chicago.org



September Meeting Notice

Tuesday September 24, 2002

Tour of Xytel Facility

Xytel Corporation
1001 Cambridge Drive
Elk Grove Village, IL 60007
(847) 357-8700

Note: Tour begins at 6:00 pm

Dinner

Wellington of Arlington
2121 S Arlington Heights Rd
Arlington Heights
847-439-6610

Agenda

Tour.....6:00 pm
Cash bar upon arrival at Wellington
Dinner.....7:00 pm
Presentation.....8:00 pm
Jay Khadye, "Xytel in 2002 and Beyond"

Cost

\$25 for members
\$27 for non-members
No charge for AIChE student chapter members
(see your advisor).

Menu

Choice of prime rib, fresh broiled whitefish or vegetarian. Entrees include garden salad, baked potato, soup and vegetable of the day, rolls and butter, and chocolate mousse

Reservations

Make your reservations by calling the AIChE Reservation Hotline at 847-588-3323 or emailing evalopez@teianalytical.com. Or register online at www.aiche-chicago.org. Deadline is noon Sept. 17. Please indicate meal choice at time of reservation.

Directions

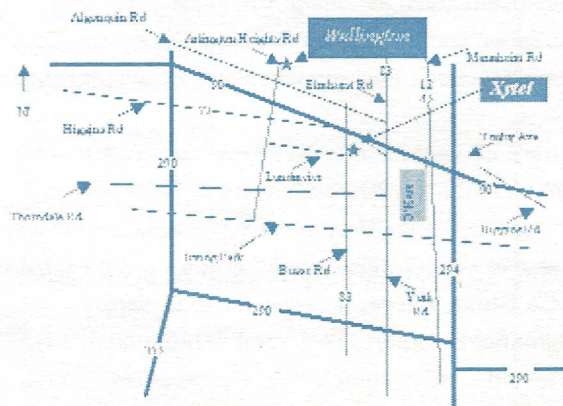
From Xytel to The Wellington:

Go right onto Landmeier, right on Busse Rd, left on Algonquin Rd, and then right onto Arlington Heights Rd.

From the East:

Go west on Route 90. Exit on Elmhurst Road South. Go a 1/2 mile and make a right on Landmeier. Go 1/2 mile past Higgins Road, and make a right on Cambridge Drive. Xytel is immediately on your right.

Continued on page 2



(continued from page 1)

Directions

From the Southeast:

Route 290, exit on Route 83 and go north. Continue approximately 5 miles on 83 (Busse Rd). Go right on Landmeier (Holiday Inn will be on your left). Go 1 block and make a left on Cambridge Drive. Xytel is immediately on your right.

From the West and Southwest:

Route 290, exit on Thorndale Road. Go east on Thorndale. Follow Thorndale for approx. 3 miles and make a left on Route 83/Busse Rd. Go approximately 2 miles and make a right on Landmeier (Holiday Inn will be on your left). Go 1 block and make a left on Cambridge Drive. Xytel is immediately on your right.

Topic

The meeting will convene at Xytel Corporation in Elk Grove Village at 6:00 p.m. Attendees will be given an introduction to Xytel and a tour of their fabrication shop.

Xytel offers a full range of engineering and fabrication services to assist companies in taking their process development from concept to commercial scale. They are considered a leader in the design and fabrication of advanced, computer controlled pilot plants and modular systems.

Their experience covers a wide variety of advanced process technologies in a broad range of industries and applications, including: Chemical / Petrochemical, Petroleum Refining, Food and Pharmaceutical, Environmental and Polymerization.

In their 28 year history, Xytel has completed over 600 projects, for 200 customers in 25 countries around the world. They serve a global customer base and are centrally located in the Chicago suburb of Elk Grove Village, IL, adjacent to O'Hare International Airport. Their joint venture company, Xytel India, adds complementary expertise in Southeast Asia.

Following the tour, the meeting will adjourn to the Wellington for dinner. At 8 pm there will be a short presentation about Xytel Corporation at 8pm by Jay Khadye, Director of Process Technology, Projects and Business Development.

Professor Julio Ottino Wins

The 2002 Ernest W. Thiele Award

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

Congratulations to Professor Julio Ottino, R.R. McCormick Institute Professor of the Chemical Engineering Department of Northwestern University for being the recipient of the 2002 Ernest W. Thiele award.

This prestigious award will be presented to Professor Ottino at the September 24, 2002 meeting of the Chicago AIChE section.

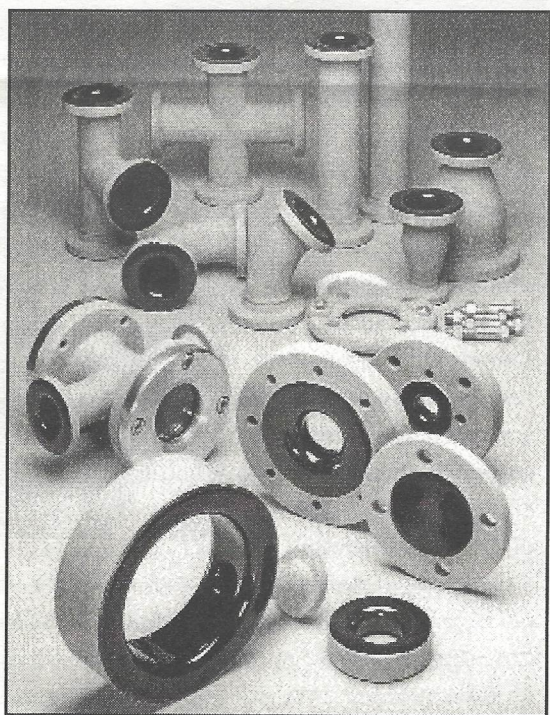
Dr. Ottino is recognized for his seminal research in the areas of chaos and mixing of liquids and solids and for his outstanding contributions as an educator, academic leader and mentor. Dr. Ottino has also lead the Chemical Engineering department at Northwestern and has brought new and exciting programs to the chemical engineering curriculum.

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 Julio Ottino on his achievement.

Ernest W. Theile 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



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Chair's Corner

Alan Levine, Law Engineering
Chair 2002-03
Chicago Section AIChE

As you are reading this, children everywhere are getting ready to go back to school, the days are getting cooler, and before we know it the leaves will be turning colors. I hope everyone had a wonderful and relaxing summer, and I would like to welcome you back to our new programming year. One of the roles the local section plays is to provide interesting programming to our members. In the past several years, attendance has dropped off at our monthly meetings to less than half of what it was. While there are certainly many reasons for this, we are making some changes to the format and hope you will be as excited as we are. We hope these changes will rekindle the spark and interest level of the local section members.

We are starting off the year with a plant tour. Plant tours continue to be one of my favorite meetings, and I have heard this echoed by many different people over the years. Then in October, the Instrument Society of America (ISA) will have its annual show at McCormick Place in Chicago. This show travels to a different location each year and only stops in Chicago every few years. With the show back in Chicago, people are buzzing with excitement. We are planning a reception during the show to encourage people to come see what new technology is hitting the streets, and to provide a place to talk to old friends during and after the show.

The AIChE National Meeting will be November 3-8 at the Indianapolis Convention Center in Indianapolis, Indiana. Some of the Topical Conferences will include Nanoscale Science, Sustainable Energy, and Bioformatics. It's certainly difficult for many of us to travel to the meeting when it's far from home and work. With the proximity of the meeting this year, November's local section meeting will be planned to encourage attendance and take advantage of its location and

great offerings. I hope everyone can take advantage of the meeting in one form or another.

We hope these meeting topics have peaked your interest enough to want to attend. Non-members are also welcome so if you know someone who would enjoy a plant tour, bring them to the September meeting. Finally, if you have any ideas for topics or other ways to improve the meetings please contact one of the board members and let us know. We appreciate your help.

Speaking of help, we are always looking for volunteers to help with tasks both small and large. If you want to get involved, just stop a board member at a meeting, or give us a call. We concluded last years programming by hosting the national Leadership Development Conference. This was a great success because of all the volunteers who helped with the planning and execution of the meeting. We are thankful for all the help we had in the past and look forward to working with you in the future. Enjoy the upcoming fall weather and I hope to see you at this month's meeting.

What Is Chemical Engineering?

Alan Zagoria, UOP

The Chicago Section's Student Outreach Committee enlightened, and actually entertained, a group of high school science teachers and students on the subject of "What Is Chemical

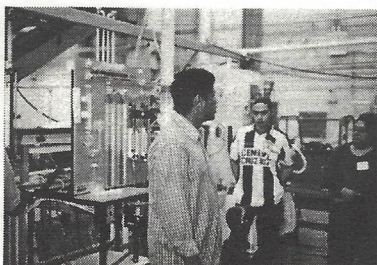
Engineering". An appropriate subtitle for the seminar might have been "Why would I want to be a Chemical Engineer?" or "Chemical Engineers as Problem Solvers". We put together a broad range of engaging speakers, interaction with UIC chemical engineering students, and a laboratory tour to round out the picture.

UIC hosted the event; Department Chair Ken



Brezinsky presented an overview of the curriculum and provided the University students to represent chemical engineering from the student's point of view. We showed the AIChE Career video to give an introduction to what chemical engineers do and where they do it. Our panel of professional engineers represented plant engineering, catalyst research, technical service, and environmental consulting. Our panelists (Ann Dougherty of Portland Cement, Greg Maher of UOP, Raj Patel of Unilever, and Ralph Sapko of EarthTech) did a great job of representing the diversity of challenges open to chemical engineers. Each put a personal face on the triumphs, trials and tribulations of chemical engineering.

Then, the high school students and teachers got to see what a unit ops laboratory, and a graduate research lab (high pressure combustion) look like.



We ended the afternoon with two short technical presentations. Peter Clark was the hit of the day with his presentation "Preserving the Environment While Making Delicious Ice Cream" - but he had an unfair advantage. He gave away free samples. Alan Zagoria of UOP then gave an introduction to "What Goes On In an Oil Refinery".

Throughout the Seminar the audience was actively engaged, asking lots of questions. The feedback forms demonstrated that we were successful in providing a much better understanding of our little-known profession. Our only regret is the lower-than-hoped for turnout due, in part, to a last minute scheduling change by the Chicago Public Schools.

The whole Section owes a vote of thanks to our speakers, the Chemical Engineering Department of UIC, and Stephen Schade and Cindy Blomquist whose behind the scenes efforts made all this possible.

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, 2003.

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

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fax 630-420-4832

email: simnicjj@bp.com

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. Huh. Well, this is embarrassing, because I seem to have lost the rest of this disclaimer. I guess I left it on the May newsletter. Oh well. I think the rest goes like this. Don't believe everything you read. And if something gets you steamed or something is wrong, it's either the editor's or author's fault and not the fault of anyone at National, the Chicago Section officers or their accountants. Then there is some more legal mumbo jumbo, and I can't remember how it goes, but I'm sure it's really important. I think that's about it. Oh, wait. One more thing: if you have any questions or complaints or want to submit an article for the next newsletter, contact the editor at polarbear4x@yahoo.com before September 6, 2002. That's my story and I'm sticking to it.

What's So Great About Continuous Processes?

J. Peter Clark, Consultant to the Process Industries
Oak Park, IL, Jpc3@worldnet.att.net, 708-848-2205

A long time ago, I taught chemical engineering and so I not only believed in our profession's credo but actively taught it -- continuous processes are good, batch processes are bad. Automation is good (almost expected), manual operations are bad (almost hard to find). Then I got into the food business. I'm still very proud of being a good chemical engineer, but I have come to challenge some articles of faith.

Take continuous mixing. Sounds like a good idea. As with any continuous process, the benefits should be consistency, low labor cost, smaller volume equipment. Makes sense for a large volume, long running process. However, relatively few food processes fit that description. Most of them have short runs, widely varying compositions, and, most importantly, widely varying physical properties. It is hard to design a single device that can feed, convey and mix materials that vary in properties from salt, sugar and grain grits to starch, soy flour and spices, yet that is pretty typical for a food dry mix plant.

Further, it is not immediately realized that mixing is a minor issue in continuous processes -- feeding is the issue. Each ingredient must be fed with great precision because a deviation in any one causes a deviation in a portion of the final product. Usually, there is little back mixing to smooth out variations, though if there is some, this helps. If one considers that each feeder is some sort of feedback device, measuring error and attempting to correct, then it follows that at least one feeder will be always be deviating, maybe more than one. Thus in a continuous mixing process with multiple ingredients, the composition is probably never exactly on target. Depending on the application, this may be more or less acceptable, but the extent of variation is probably rarely appreciated.

Another process which has tempted us chemical

engineers into a bad idea is proofing in baking. Proofing is the step during baking in which yeast raised products are allowed to react, as yeast converts sugar and starch to carbon dioxide and alcohol, making the dough lighter and modifying its flavor. Depending on the product, this step can take minutes to hours. Typically, it requires warm temperatures and high humidity. Sometimes the dough is proofed or fermented in bulk, up to a thousand pounds at a time, and other times it is done as pieces, such as loaves or bagels.

Most of the arguments for continuous processes would seem to apply -- consistency would be good, volume of controlled environment would be minimized and maybe labor would be reduced. Approaches to achieving continuous proofing have included towers filled with bread dough, chain conveyor systems for troughs (large tubs traditionally used in baking), and conveyor systems for pieces on racks. They all seem to have ignored Murphy's Law -- if anything can go wrong, it will.

Specifically, continuous proofing systems typically have little flexibility if there is an interruption in operations. The biochemical reaction occurring in dough does not stop until temperature is drastically lowered, so if a conveying system is stopped, the reaction continues and this usually is not good. If the system is strictly first in-first out, all the product contained may be lost. It only takes a few incidences of such massive losses to convince one that a more flexible system might make sense.

Despite the higher labor costs, for moving troughs or racks around, proofing systems where individual units can be retrieved probably make the most sense. Nearly every element of a baking and make-up line is subject to disruption, so building in some flexibility is wise. It is better to lose one batch of dough, if necessary, than many.

Finally, some traditionally batch processes that probably relied on time as much as anything else have been attacked by the proponents of continuous processes. Examples include conching

of chocolate, cooking of breakfast cereal, fermentation and aging of beer and wine, and mixing of bread dough. No matter what the proponents may say, and against the long-held faith of chemical engineers, I firmly believe that most of these instances are good examples of where the old and tried processes are the best -- producing good quality products and permitting the flexibility to respond to the inevitable vagaries of a real process.

Bio, Nano, Micro - All Technologies are Alive and Well in Chicago

We attend seminars and sessions at Annual Meetings to learn everything we can about emerging technologies. This year, AIChE Chicago will work to provide any information available about how these technologies are being applied in Chicago. You may have read recently that a nanotechnology corridor is being nurtured in the western suburbs. Nanotech companies are turning a profit here. Biotechnology is used in Illinois not only for drugs, but also for synthetic materials and hydraulic fluid. Several new "communities" are forming in the area. Here is the news from two of them:

- ♦ *Illinois Biotechnology Industry Organization:* IBIO will host the iBioMarketplace 2002 at the Hyatt McCormick Conference Center on October 8 and 9. The fourth annual Ibiomarketplace will feature the latest biotechnology applications in agriculture, drug discovery, informatics and materials. For more information, visit the Illinois Biotechnology web site at www.ibio.org.
- ♦ *Chicago Microtechnology and Nanotechnology Community:* The inaugural meeting on July 8th was truly of historic proportions and surpassed all expectations, comprising 48 people from the private and public sectors, industry, academia, media, financing and support services.

They have created a mailing list on Yahoo!Groups to facilitate communication, and since then approximately 60 more people have joined.

Volunteers have developed a schedule for a series of first events and are establishing CMNC in the network of Chicago micro/nano technologists and other interested parties.

Three events are tentatively scheduled for the fall:

- ♦ *Sept. 9 at UIC:* "The Chicago Twenty" Nanotechnology and Microtechnology rapid presentations + social/discussion hour.
- ♦ *Oct. 14-17 (location TBA):* "Meet the local Micro/Nano Community" event to be held in conjunction with the Nanotechnology Business Roadmap for Industry Conference.
- ♦ *November (date TBA):* The first of a series of "Mini-Workshops" highlighting micro/nano research from around the world.

The website may be active as you read this. Meanwhile, membership is open to all. Subscribe by sending an email to: ChicagoMNC-subscribe@yahoo.com

Symposium 2003 will offer a review of what is happening in Chicago with these technologies. Watch this space for more details.

Job Postings

The Job Posting service is still available for AIChE Chicago section members. Please submit your resumes or available positions to Jerry Bard at geraldb@genevaonline.com, or contact Jerry at 262-279-6394. Don't miss out on this opportunity to reach your target audience.

You can also submit your resume or position on our website, aiche-chicago.org in the Professional Development section.

Dated Mail

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