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New Haven Section  
VOLUME 22, NUMBER 3, September, 2005

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**September 22, 2005 – New Haven Section Meeting**

**Dr. Sanjay Malhotra, New Jersey Institute of Technology**

will present

**Ionic Liquids – The Designer Solvents for Organic Reactions**

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**October 18, 2005 – New Haven Section Meeting**  
(joint meeting with the New Haven Section of AIChE)

**Dr. Ronald Besser, Stevens Institute of Technology**

will present

**Miniaturization for Chemical Processing – Smaller Can Be Better**

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September Meeting Details  
October Meeting Details  
Call for Nomination of Officers for 2006  
D. Smudin becomes Acting Section Chair  
National Chemistry Week  
New Directory of Graduate Research

Thursday September 22, 2005

Dolce Heritage in Southbury, Connecticut

Dr. Sanjay Malhotra

will present

### Ionic Liquids – The Designer Solvents for Organic Reactions

Dolce Heritage  
522 Heritage Road  
Southbury, CT 06488  
(203) 264-8200 [heritage.dolce.com](http://heritage.dolce.com)

Social Hour: 5:30-6:30 p.m.  
Dinner: 6:30-8:00 p.m.  
Lecture: 8:00-9:00 p.m.



Abstract: Ionic liquids represent a new class of solvents with non-molecular, ionic character. These liquids form biphasic systems with many organic product mixtures. In order to develop an understanding for organic and organometallic chemistry in these neoteric solvents, our research program has focused on both metal and enzyme catalyzed reactions. Our study shows that ionic liquids allow an enhanced stability of organometallic reagents and biocatalysts, an easy product recovery as well as possible recycling of homogeneous catalysts. A systematic approach has led

to development of simple protocols for C-C & C-N bond formation reactions; asymmetric catalysis, as well as designing of new chiral systems. Study of biocatalytic systems in ionic liquids has resulted in new methodologies for synthesis of natural building blocks such as amino acids, peptides, nucleotides and biochemical intermediates. An overview of these studies with representative ionic liquids would demonstrate a wide range of potential industrial applications of these systems.

**Brief Biographical Sketch:** Sanjay V. Malhotra obtained a Ph.D. in Chemistry in 1995 from Seton Hall University, NJ. Subsequently he worked as Research Associate with Nobel Laureate Prof. H.C. Brown at Purdue University, West Lafayette, IN. In 1999 he joined the Faculty of the Chemistry Department of the New Jersey Institute of Technology. His research focus is on developing new methodologies for organic, asymmetric synthesis via chemical/bio-catalysis in neoteric medium, ionic liquids. He is editor of two books, *New Methodologies in Asymmetric Synthesis*, Oxford Press, 2004 and *Organic Synthesis with Ionic Liquids*, Oxford Press, 2005 (in press). He has authored/co-authored over 50 articles (journal, reviews & book chapters).

### Heritage Dolce Restaurant – Thursday September 22, 2005

Entrée choices: *Grilled Salmon Fillet*  
*Hungarian Beef Stew*  
*Pan Seared Chicken Breast with Garlic Demiglace*

Price: ACS Members/Guests \$25  
Teachers/Retirees/Unemployed/Students \$20  
Price includes tax and tip.

All entrees are served with Heritage *or* Caesar Salad, Pasta Primavera, baby spinach, sun dried tomatoes and parmesan cheese, Chef's choice of Starch & Vegetable, and frozen strawberry desert or pears poached in cinnamon syrup and whipped cream. Coffee, tea or decaf will be available.

Please make your reservation by contacting Dennis Jakiela by Monday September 19, 2005, at (203) 375-1137 or e-mail to: [djakiela@hampfordresearch.com](mailto:djakiela@hampfordresearch.com). Please leave your name, telephone number, dinner choice and number of reservations desired. Cancellations must be made 24 hours prior to the meeting or you may be charged for dinner.

You may also attend the lecture without the dinner. Please notify Dennis Jakiela so he can keep the count of number of attendees, and arrive at the restaurant by 8:00 PM when the presentation will normally begin.

**FROM New Haven:** Take Route 34 to Route 8 North. Proceed on Route 8 to exit 22. At the bottom of the ramp turn left, and at the light turn left on to Route 67 and continue to Southbury. In Southbury, continue under the I-84 overpass to the third traffic light. Turn left on to Heritage Road. Dolce Heritage is approximately one mile ahead on the right side.

**FROM Meriden and Hartford:** Take Interstate 84 West to exit 15 in Southbury. Turn right at the bottom of the exit ramp and proceed to the second traffic light. Turn left on to Heritage Road. Dolce Heritage is approximately one mile ahead on the right side.

**FROM Danbury/Southbury:** Take I-84 East to exit 15 in Southbury. Turn left on to Route 67/6 and proceed to the third traffic light. Turn left on to Heritage Road. Dolce Heritage is approximately one mile ahead on the right side.

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#### AD SPACE Available in the Newsletter

The Ad Guidelines are as follows: Situations-wanted by New Haven Section member - **No Charge**. Non-members **\$20 for four lines**. Want Ads are **\$40 for a 4-line ad** or **\$85 for a full-page (4 x 8 inch)**.



Tuesday October 18, 2005

University of New Haven, Bartels Hall

Dr. Ronald Besser

will present

**Miniaturization for Chemical Processing – Smaller Can Be Better**

University of New Haven  
Upper Lounge, Bartels Hall  
300 Boston Post Road  
West Haven, CT 06516 [www.newhaven.edu/directions/campmap.html](http://www.newhaven.edu/directions/campmap.html)

Social Hour: 5:30 p.m.  
Dinner: 6:30 p.m.  
Lecture: 8:00 p.m.

--- Joint meeting with the New Haven Section of AIChE ---



**Abstract:** *Microchemical Systems* (MCS) are miniature, microfabricated systems with chemical and fluidic functionality, and characteristic dimensions in a range of 1-1000  $\mu\text{m}$ . They possess distinct advantages over conventional chemical systems, primarily due to their extraordinarily high surface-to-volume ratios leading to superb transport properties for heat and mass.

In the first part of this talk, Prof. Ronald Besser will introduce the audience to the subject of MCS, what they are and are not, how they are constructed, elaboration of their many advantages, and descriptions of some of the applications that are especially relevant to MCS. The second part of the

talk will introduce examples from Besser's own research work.

Besser's group focuses on understanding the fundamental issues of chemical reaction in the confined geometries of MCS. This work is approached by holistically bringing together tools from various science and engineering disciplines. Microfabrication is used to create precisely defined structures in which chemicals can be fed and reactions studied. Testing methods involve coupling these small reactors to the external world to control them and sample their output with chromatographs and mass spectrometers. The data gathered are joined with mathematical models in order to understand the observations as well as predict behavior. The resulting understanding contributes to the small but growing base of knowledge needed to propel microchemical systems into real technology entities that can ultimately benefit society.

Recent work in the group has focused on understanding a reaction that eliminates a poison from the gas used for fuel cells. The process eliminates carbon monoxide in a critical step in the production of hydrogen from hydrocarbons for fuel cells. This kind of processing is essential for proton-exchange membrane (PEM) fuel cells which are the front runners for broad commercialization. New initiatives in the group will explore

the processing of military logistical diesel fuels which can provide power and significantly lighten the load of tomorrow's foot soldiers, as well as bring distributed electrical power to large Navy vessels.

The group's work in processing of pharmaceutical chemicals involves the development of a new reactor concept which can circumvent problems existing in current reactor technology used in the industry. In this new approach, miniaturization affords the possibility of creating an intimate mixture of liquid and gaseous reacting chemicals, while at the same time efficiently extracting the heat generated by the process. The reactor is meant to be used with commercial catalysts already available, and can serve as a tool that pharma companies could use to screen catalysts from various vendors for a particular synthesis step being developed for manufacturing.

Prof. Besser's background is primarily in the development of materials, processes and devices. This expertise has been leveraged in developing microchemical systems using many of the same techniques exploited in MEMS technology. He and his students collaborate heavily with microsystems experts at Stevens, Lucent Bell Labs, NJIT, and the Cornell Nanofabrication Facility (CNF), where Besser serves as an elected member of the CNF User Committee.

**Brief Biographical Sketch:** Dr. Besser is professor of chemical engineering at Stevens Institute of Technology in Hoboken, New Jersey. Prior to joining Stevens in 2002, he was associate professor and group leader at the Institute for Micromanufacturing at Louisiana Tech University in Ruston, Louisiana. He is co-director and a core researcher at the New Jersey Center for Microchemical Systems, a Stevens center which is dedicated to leadership in understanding and developing microchemical systems. Prior to entering academia, he spent several years working in Silicon Valley industry in microfabrication and microelectronic materials and device development. Dr. Besser holds the B.S. degree in chemical engineering from U.C. Berkeley, and the M.S. and Ph.D. degrees in Materials Science and Engineering from Stanford University. He has more than sixty technical publications and patents. For further information on Dr. Besser and

**University of New Haven – Bartels Hall - Tuesday October 18, 2005**

The dinner will be a hot buffet.

Caesar Salad, Garlic Bread  
Chicken Parmesan  
Penne a la Vodka  
Meatballs, Sausage & Peppers  
Italian Cookies and Cannolis  
Water, Coffee, Tea and Decaf

Price:	ACS Members/Guests	\$25
	Teachers/Retirees/Unemployed/Students	\$20
	Price includes tax and tip.	

Please make your reservation by contacting **Dennis Jakiela** by **Friday October 14, 2005**, at (203) 375-1137 or e-mail to: [djakiela@hampfordresearch.com](mailto:djakiela@hampfordresearch.com). Please leave your name, telephone number and number of reservations desired. Cancellations must be made **48** hours prior to the meeting or you may be charged for dinner.

You may also attend the lecture without the dinner. Please notify Dennis Jakiela so he can keep the count of number of attendees and arrive at the restaurant by 8:00 PM when the

## Directions to University of New Haven – Bartels Hall

### **From west:**

#### **Connecticut Turnpike (I-95) Northbound.**

Take Exit 43, Campbell Ave. Turn left at bottom of exit ramp. Continue past U. of New Haven sign on left at Ruden St. (0.6 miles) to intersection with Route 1 (Boston Post Rd). Turn left, travel to top of hill, turn left into the U. of New Haven.

#### **Merritt/Wilbur Cross Parkway (Route 15) Northbound.**

Take Exit 57, Route 34 east (Derby Ave.) Travel 3.4 miles to Route 122 (Forest Rd). Turn right, travel 1.0 miles to first traffic light, Route 1 (Boston Post Rd). Turn right, travel to top of hill, turn left into the University of New Haven.

### **From north / east:**

#### **Connecticut Turnpike (I-95) Southbound**

Take Exit 43, First Ave. Turn right at bottom of exit ramp, travel 0.5 miles to second traffic light, Route 122 (Campbell Ave.). Turn right and continue past intersection with Ruden St (note U. of New Haven sign at left) to intersection with Route 1 (Boston Post Rd). Travel to top of hill, turn left into the U. of New Haven.

#### **Merritt/Wilbur Cross Parkway (Route 15) Southbound.**

Take Exit 57, Route 34 East (Derby Avenue) Travel 3.4 miles to Route 122 (Forest Road). Turn right, travel 1.0 miles to first traffic light, Route 1 (Boston Post Road). Turn right, travel to top of hill, turn left into the University of New Haven.

*NOTE: From Southbound I-91, remain on highway and follow to juncture with I-95 South (toward New York City). The follow directions for I-95 south*

#### **Bartels Hall – The campus center:**

From the main entrance on the Boston Post Rd., turn left for parking. Bartels Hall is near the parking lot. Go to the Upper Lounge in Bartels Hall. A campus map is available at <http://www.newhaven.edu/directions/campmap.html>

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## **Congratulation to ACS 50-Year Members**

The New Haven Section is proud to honor and congratulate the following chemists for 50 years of membership in ACS. They will be the guests of honor at a New Haven Section meeting later this fall.

**Dr. Siegfried Aftergut**

**Mr. Martin Vartan Azarian**

**Mr. John A. Gannon**

**Mr. James R. Humphrey**

**Mr. Richard T. Pye**

**Dr. John Stanley Roscoe**

**Mr. O. B. Samler**

**Dr. Hansjuergen Schroeder**

## **Call for Nomination of Officers for 2006**

It is once again time to choose new people to lead the Section in the upcoming year. Three positions are available for 2006. These are Program Chair, Councilor and Secretary.

The Program Chair is responsible for arrangement of speakers and meeting locations for the year's meetings. He or she is assisted by the Executive Committee. In the following year the Program Chair becomes Section Chair and runs the meetings. The Secretary is responsible for taking minutes at Executive Committee meetings and handling any Section correspondence. This is a two-year term. The Councilor represents the Section at national ACS meetings and is a liaison between the Local Section and the National ACS. This is a three-year position. All three officers are members of the Executive Committee.

If you are interested in running for one of these offices, please contact Dr. Ali Banijamali at 203 573-3220 or by e-mail at [ali.banijamali@chemtura.com](mailto:ali.banijamali@chemtura.com).

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## **Dr. David Smudin Assumes Position as Acting Section Chair**

Since the duly-elected Section Chair was unable to assume the duties of the office during 2005, Dr Ali Banijamali took over for the first half of the year. For the remainder of the year, Dr. David Smudin has agreed to take on this position. Dave can be contacted by e-mail at [dsmudin@aol.com](mailto:dsmudin@aol.com). The Section thanks both Dave and Ali for volunteering to help the Section through a difficult period.

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## **National Chemistry Week (NCW), 2005 - Chemistry and Toys**

Individuals dedicated to enhancing the public's awareness of the contributions of chemistry are invited to support **National Chemistry Week, October 16-22**. The 2005 theme is "The Joy of Toys" The annual NCW celebration unites ACS local sections, industries, schools, and individuals in communicating the importance of chemistry to the quality of life. This year, the New Haven Section will again sponsor written contests for grammar, middle and high schools located within New Haven County and a poster contest for grades K-2, 3-4, 5-8 and 9-12. The posters will serve as public service announcements emphasizing the role of science and chemistry in toys (i.e., toy development and production, materials from which toys are made, toy safety through chemistry, toys from different times in history and different cultures and toys that use chemistry to make them work. Information will be mailed to teachers by Caroline Maselli. Students may enter even if their teachers do not participate by directly contacting Ms. Maselli at (203) 573-2039, or by e-mail at [caroline.maselli@chemtura.com](mailto:caroline.maselli@chemtura.com). For more information about NCW, also visit [chemistry.org/ncw](http://chemistry.org/ncw).

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## **ACS Directory of Graduate Research Available**

The [ACS Directory of Graduate Research 2005](#) is the premier source of information on faculty and research programs in chemistry, chemical engineering, biochemistry, polymers & materials science, toxicology, medicinal/pharmaceutical chemistry, and environmental science in the U.S. and Canada. It lists faculty member biographical information, area of

specialization, titles of all papers published within the last two years, and telephone/FAX numbers. This edition contains faculty information for the '05-06 academic year. DGRweb 2005 will be released late October 2005 at <http://chemistry.org/education/DGRweb> and includes access to the complete 1997, 1999, 2001, and 2003 databases.