

## The Chemical Record

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Columbus Section of the American Chemical Society, Inc.

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### ABOUT THE COLUMBUS SECTION

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The Columbus Section of the American Chemical Society comprises approximately 1,500 members who live and work in the following central Ohio counties: Delaware, Fairfield, Fayette, Franklin, Hocking, Knox, Licking, Madison, Marion, Morrow, Muskingum, Perry, Pickaway, Ross, and Union.

The Mission of the American Chemical Society (ACS) is to encourage in the broadest and most liberal manner the advancement of the chemical enterprise and its practitioners. Toward that end, the ACS advances scholarly knowledge, provides professional services and support, communicates with varied audiences, and is actively involved in the science, education, and public policy arenas.

The Columbus Section of the ACS adheres to this mission and the strategic thrusts of the national organization and leadership by providing programs and networking opportunities for Chemistry professionals in Central Ohio.

We invite ACS members and scientists in the community to lend their expertise and talents to our activities in science education, government and legislative policy issues, safety in our industrial plants and in our communities, and care of our land.



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Chemistry for Life®

## MEETING NOTICE

Columbus Section of the American Chemical Society, Inc.

[columbus.sites.acs.org](http://columbus.sites.acs.org)

Meeting #879

*Art and Industry: Science Takes an Artsy Turn*

**Dr. Mindy Keefe**

**Senior Research Manager, Dow Chemical Company**

Thursday February 18, 2016

**Spaghetti Warehouse**  
**397 West Broad Street (between the tracks)**  
**Columbus, OH 43215**  
**614-464-0143**

### PROGRAM DETAILS

5:00 – 6:00 PM	<b>Executive Committee Meeting</b> – All members are welcome to attend.
6:00 – 6:45 PM	<b>Social Hour</b> – Appetizers and beverages. Cash bar.
6:45 – 7:45 PM Dinner	Family style Italian dinner including <ul style="list-style-type: none"><li>• Salad</li><li>• Spaghetti and meatballs</li><li>• 15-Layer lasagna</li><li>• Fettuccini alfredo</li><li>• Four-cheese manicotti</li><li>• Chicken parmigiana</li><li>• Cannelloni for dessert</li></ul>



<b>7:30 – 9:00 PM Program</b>	<b>Lecture</b> <i>Art and Industry: Science Takes an Artsy Turn</i>
<b>Cost</b>	The charge for dinner is \$20 per person for members and non-members, \$5 for retired and unemployed members, and \$5 for students. Payment will be collected at the door; cash and checks accepted. There is no cost to attend the program only. <b><i>Remember that this is a dinner order and must be paid. Please help control costs by honoring your order.</i></b>
<b>RSVP</b>	To avoid dropped reservations please use the <a href="#">Meeting Reservation Form</a> on the section's website ( <a href="http://columbus.sites.acs.org/">http://columbus.sites.acs.org/</a> ). Alternatively, please send an e-mail with the same information to us at the following e-mail address: <a href="mailto:acscols@wowway.com">acscols@wowway.com</a> . Finally, you may also use the voice mail reservations service by calling 614-447-3600 extension 7047. Follow the template below for e-mail or voicemail reservations.
<b>*Voicemail/e-mail Reservations Template</b>	<ul style="list-style-type: none"> <li>• First and last name: Please spell last name.</li> <li>• Membership category: member, non-member, retired, emeritus, unemployed, student.</li> <li>• Employer</li> <li>• Your choice of entrée: Spaghetti, Lasagna, Fettuccini, Manicotti, Chicken parmigiana</li> <li>• Please indicate if you will join us for the <u>Dinner &amp; Program</u> OR <u>Program Only</u></li> <li>• Your phone number, in case we need to contact you..</li> </ul>
<b>Reservation Deadline</b>	<b>Friday, February 12, at 5:00 pm</b>
<b>Program Contact</b>	<b>David Speth</b> , 614-538-0635, <a href="mailto:drspeth@sbcglobal.net">drspeth@sbcglobal.net</a>
<b>Directions &amp; Parking</b>	<p><b>From the North:</b> Take Ohio 315 south to the US-62/OH-3/Town Street Exit toward Rich Street. Stay straight to go onto US-62 E/OH-3 toward W Walnut Street. Turn slight left toward I-70 E. Turn left onto US-62 E/OH-3/W Rich Street. Turn left onto McDowell Street. Turn right onto W. Broad Street. Spaghetti Warehouse is approximately 0.1 miles on the right between the two sets of railroad tracks.</p> <p><b>From the East:</b> Take I-670 West to the US 23/3<sup>rd</sup> street exit (4B) on the left. Turn right onto Broad Street. Spaghetti Warehouse is 0.75 miles west just past the river and COSI between the two sets of railroad tracks on the left.</p> <p><b>From the West:</b> Take I-670 East to the US 33 exit (2A). Go to Ohio 315 South to the US 40/Broad Street exit. Go left onto Broad Street. Spaghetti Warehouse is approximately 0.4 miles east on the right between the two sets of railroad tracks.</p> <p><b>From the South:</b> Take US 23 North to Broad Street. Turn left. Spaghetti Warehouse is approximately 0.7 miles west just past the river and COSI on the left between the two sets of railroad tracks.</p> <p><b>Parking is free.</b></p>



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ABOUT THE TALK:

*ART AND INDUSTRY: SCIENCE TAKES AN ARTSY TURN*

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**Art & Industry: A Collaborative Approach to Solving Technical Challenges in the Field of Art Conservation**

This presentation will review the technical collaboration between The Dow Chemical Company and the art conservation community designed to leverage industrial coating expertise and resources to solve technical challenges in the field of art conservation. This journey began with a three-way collaborative effort between Dow, Tate Museum, and the Getty Conservation Institute focused on identifying improved cleaning systems for unvarnished modern painted surfaces. Over the years this effort has expanded to address other technical challenges in the field of art conservation. In this talk Mindy will review two areas of research: 1) the design of new cleaning systems for acrylic paints and beyond, and 2) the removal of graffiti ink from Mark Rothko's 1958 painting, *Black on Maroon*.

**1. *The design of new cleaning systems for acrylic paints and beyond***

Artists' increased use of new paint and material types since the 1950s has created a need for new approaches to treatment as traditional wet and dry cleaning systems have been found to be unsuitable in many cases. This body of research has focused on the development of improved wet cleaning systems for artists' acrylic emulsion paints. This study describes four novel microemulsion systems based on water and mineral spirits, each formulated with different surfactants, either ionic or non-ionic. For this application, water-in-oil microemulsions were designed to capture the positive aspects of water-based cleaning systems (good pick-up and dispersion of soils; control over the conductivity and pH; use of adjuvants such as chelates, *etc.*) while limiting, to a degree, the risks associated with exposure to aqueous cleaners. These novel cleaning solutions have been found to be very effective at removing surface soiling on acrylic paintings and other water-sensitive works of art. The question on what other changes are occurring at the paint surface remains. A range of spectroscopic techniques have been employed to characterize the uppermost paint surface for changes induced by aging and treatment with different cleaning solutions. The development, performance and use of these novel cleaning solutions in the field will be reviewed.

**2. *The removal of graffiti ink from Mark Rothko's Black on Maroon, 1958: a collaborative approach***

Mindy shall describe the processes used to support the removal of graffiti ink from Mark Rothko's *Black on Maroon*, 1958 (Tate, T01170). After establishing a treatment team and an advisory group, a research-supported treatment plan was devised by Tate. This involved the production of test substrates based on current knowledge of T01170 materials, investigations into the ink product used and collaborations with industry regarding solvent selection. The Hansen solubility parameters of the ink were determined and custom software from Dow was employed to refine solvent selection. Subsequent empirical testing on a range of substrates alongside explorations into solvent application and ink removal methods proved equally valuable to the success of the treatment. While a range of solvents could dissolve the ink product, the skilled use of benzyl alcohol and/or ethyl lactate resulted in good recovery of the painting surface, with minimal gloss change and pigment loss.

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#### ABOUT THE SPEAKER:

*DR. MINDY KEEFE*

**Dr. Melinda (Mindy) Keefe** received a B.S. in chemistry from Pennsylvania State University in 1997 and a Ph.D. in inorganic chemistry from Northwestern University in 2001. Mindy then joined the Research Assignments Program at the Dow Chemical Company in Midland, Michigan.

In her Dow career, she has worked in several areas including Corporate R&D, Dow Latex, and Dow Coating Materials. Her work has been focused primarily in the synthesis and testing of new binders and plastic pigments for use in paints and coatings. She has also worked in high throughput research with a focus on new approaches to data mining and modeling of large datasets. She currently works at Dow's Northeast Technology Center located in Collegeville, PA as a Senior R&D Manager in Dow Coating Materials.

As a side effort, Mindy leads a collaboration between Dow and the art conservation community to leverage Dow's technical capabilities to the challenges of art conservation.

Mindy's work has been recognized by several awards. She was part of the Dow team that was recognized with the 2013 Presidential Green Chemistry Award and 2013 R&D 100 Award for EVOQUE™ pre-composite polymers. In 2014, she was recognized by *Fortune* magazine with a "Heroes of the 500 Award" for her successful work supporting the art conservation community. In 2015, she was awarded the ACS Rising Star Award from the Women Chemists Committee of the American Chemical Society.



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#### OUTGOING CHAIRMAN'S NOTE

*By DAVID SPETH*

As the chairman for 2015, I want to thank all the members of the Executive Committee and the committee chairs for their help with running the Columbus Section last year. We started the year late and without a chair-elect and two alternate councilors. Every active member of the Columbus Section Team took on extra responsibilities and I think we put together a good program for our members. Thanks particularly to our outgoing Executive Committee members: Cynthia Hummel, Ashish Deshmukh, and Jeff Trent.

I also want to thank three of our long serving committee chairs. During 2015, our webmaster Priscilla Ratliff stepped down. Many thanks to Priscilla for editing and updating the website and for keeping the membership informed. Rob Williams volunteered to take over as webmaster. Thanks to Rob for helping us.

I also want to thank Gordon Renkes for preparing name tags for all the meetings. While it is not a public job, it is important and we thank Gordon for his efforts.

Finally, I want to thank George Greene who has been the editor of our newsletter, The Chemical Record, for many years. Having retired, George is looking forward to taking on new activities. We thank him for his many years of service to the Section. Ashish Deshmukh will be replacing George as editor starting with this issue. We thank him for taking on the role to keep our membership informed.

We had several notable successes in 2015. We continued our activities with the larger Columbus Community by sponsoring activities at COSI, judging projects at State Science Day and participating in Fountainside Science Day with Columbus Recreation and Parks. We also reinstated awards for the best junior and senior chemistry students at nine local colleges and universities.



The award meeting attracted over 100 attendees, which was our largest meeting by far. I think the students enjoyed meeting chemical professionals and our members were reinvigorated by talking to enthusiastic students.

We missed a few activities during 2015. In particular, we missed National Chemistry Week because our demonstration site in the main Columbus Library was closed. We hope to resume that activity in October 2016. During 2015, we did not participate in Earth Day activities either. For too long we have relied on a handful of people (or less) for our outreach efforts. If you are interested in helping out with either of these activities in 2016, please let one of the Executive Committee members know and we will put you in touch with the appropriate people. The more the number of volunteers, the more activities can be supported.

Finally, I want to welcome the Columbus Section officers for 2016

Chair	Jeff Trent	Councilors	Ed King
Chair-elect	Jim Wasil		Virginia Songstad
Past Chair	Dave Speth		Joan Esson
Treasurer	Kelly Moran	Alternate Councilors	Don Songstad
Treasurer-elect	Krishna Bobba		Bob Kroshefsky
Secretary	Puram De		Robert Woodman

You will not only see several well-known names on the list, but also some new ones. We appreciate members of the Columbus Section stepping up to take charge of the organization so we can continue to provide an interesting and varied program for the membership. The new Executive Committee members have already come up with several excellent ideas for new activities for the Section. Stay tuned for these as the year progresses.

Finally, I want to personally thank all the members who helped us in any way last year. The Chair and the Executive Committee can only function with the help received from several people behind the scenes. As outgoing chair, I want to thank all of you for your help. We hope you stay involved in the Section activities and continue to help us improve our programs.

### COLUMBUS SECTION ACS CALENDAR OF EVENTS

Year	Month	Date	Day	Location	Comments
2016	February	12	Friday		5:00 pm: Deadline for reservations for February, 2016 Section meeting.
2016	February	18	Thursday	Spaghetti Warehouse	Monthly Section Meeting; see details elsewhere in this issue of <i>The Chemical Record</i> .

### ABOUT THE CHEMICAL RECORD

*The Chemical Record*, official newsletter of the Columbus Section of the American Chemical Society, Inc., is published monthly, February-May and September-December (eight issues per year.) Opinions expressed by editors or contributors do not necessarily represent the official position of the Columbus Section or of the editorial staff. We welcome your contributions to your *Chemical Record*. Please submit them via postal or electronic mail to **Ashish Deshmukh**, 2690 Fisinger Road, Columbus, Ohio 43221, [ashishdeshmukh@hotmail.com](mailto:ashishdeshmukh@hotmail.com). Electronic mail contributions should be in MS Word file attachments (preferred) or plain-text messages. *Thank you very much!*

### CHANGE OF ADDRESS

Changes in postal or e-mail address should be reported to the Membership Chair, **David Speth**, 614-688-5162, [drspeth@sbcglobal.net](mailto:drspeth@sbcglobal.net). David will forward the change-of-address information to ACS Headquarters.

### ADVERTISING RATES

Advertising rates for *The Chemical Record* are as follows (per single insertion): Full Page, \$250; Half page, \$150; Quarter Page, \$120; Eighth Page: \$60; Business Card, \$50. Discounts: 5% for four insertions or 10% for eight insertions during a calendar year. There is no charge for "help wanted" ads.