



# ISOTOPICS

The Cleveland Section of the American Chemical Society

Volume 90 Issue 5

May 2014

## On Deck:

September 17, 2014

Speaker: TBD

Location: TBD

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## May Meeting Notice

58<sup>th</sup> Annual SAS/ACS/MSNO May Conference  
and Morley Award

Wednesday, May 21, 2014

John Carroll University, Dolan Science Center

7:00-8:00 AM	Registration
8:00-8:15 AM	Welcome
8:15-9:15 AM	Keynote Address
11:10-11:40 AM	Yeager Presentation
11:40- 12:40 PM	Lunch
5:20-6:20 PM	Morley Lecture
6:20-7:00 PM	Social
7:00-8:20	Dinner

## Structurally dynamic polymers: Using reversible bonds to access macroscopically-responsive materials

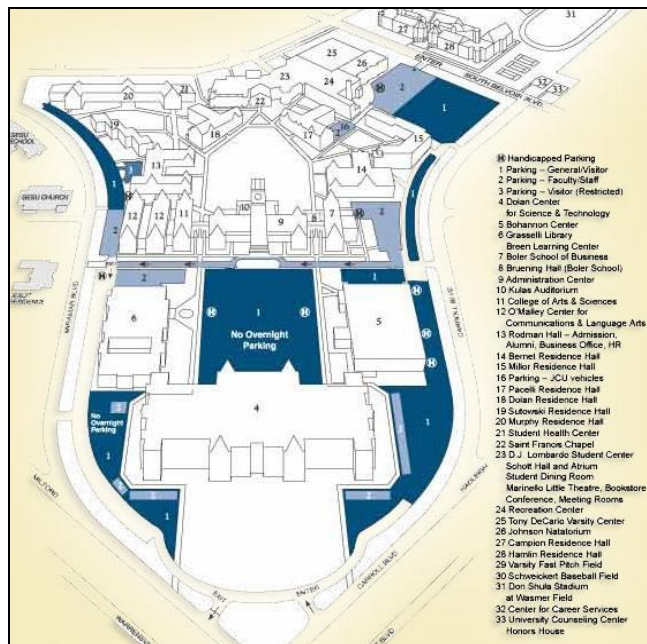
*Stuart J. Rowan, Department of Macromolecular Science and Engineering, Case Western Reserve University*

The dynamic bond can be defined as any class of bond that selectively undergoes reversible breaking/reformation, usually under equilibrium conditions. The incorporation of dynamic bonds (which can be either covalent or non-covalent) allows access to structurally dynamic polymers. These polymers can exhibit macroscopic responses upon exposure to an environmental stimulus, on account of a rearrangement of the polymeric architecture. In such systems the nature of the dynamic bond not only dictates which stimulus the material will be responsive to but also plays a role in the response itself. Thus such a design concept represents a molecular level approach to the development of new stimuli-responsive materials. We have been interested in the potential of such systems to access new material platforms and have developed a range of new mechanically stable, structurally dynamic polymer films that change their properties in response to a given stimulus, such as temperature, light or specific chemicals. Such materials have allowed access to healable plastics, actuating films, chemical sensors, thermally responsive hydrogels, shape memory materials and bio-inspired mechanically dynamic biomedical implants. Our latest result in this area will be discussed.

## DINNER RESERVATIONS REQUIRED:

Those attending the social reception and banquet dinner must be pre-registered by May 5. The banquet will include your choice of chicken or vegetarian entrée. The cost is \$25, with checks payable to the Society for Applied Spectroscopy. The registration form may be found in this issue of *Isotopics* or by using this link <http://goo.gl/6ceGkf>. For more information contact Mike Kenney by email ([mjk56@case.edu](mailto:mjk56@case.edu)) or phone (216-368-3736).

## Directions to John Carroll University



**From I-271:** Take I-271 to Exit 32 (Cedar/Brainard Roads). Follow Cedar Road west for 2.5 miles to South Belvoir Blvd. Turn left onto South Belvoir and travel south 0.7 miles. The entrance to campus will be on your right after crossing Washington Blvd. The Dolan Science Center is highlighted on the map above. The campus can be accessed off 480 by the Warrensville center road exit and that the campus is just off the Fairmount circle on the map.

For directions from other locations, please see: [www.jcu.edu/map.htm](http://www.jcu.edu/map.htm). For the campus map, see: [http://www.jcu.edu/pubaff/ABOUTJCU/campus\\_map.htm](http://www.jcu.edu/pubaff/ABOUTJCU/campus_map.htm).

## Speaker Bio



Stuart Rowan is currently the Kent Hale Professor of Engineering in the Department of Macromolecular Science and Engineering at Case Western Reserve University. He also has secondary appointments in both Biomedical Engineering and Chemistry.

Stuart was born in Edinburgh, Scotland in 1969 but grew up in Troon, Ayrshire on the west coast of Scotland. He received his B.Sc. (Hons.) in Chemistry in 1991 from the University of Glasgow and stayed there for his Ph.D. where he worked on Supramolecular Crystal Engineering of Inclusion Compounds, receiving his Ph.D. in 1995. In 1994 he moved to the Chemistry Department at the University of Cambridge and carried out research on the development of Dynamic Combinatorial Libraries in the labs of Prof Jeremy Sanders, FRS. In 1996 he was appointed a Research Associate of Girton College, Cambridge. In 1998 he moved across the Atlantic (and the continental U.S.) to continue his postdoctoral studies at the University of California, Los Angeles with Sir Fraser Stoddart FRS. While in Southern California he developed numerous new methods for the construction of interlocked molecular species. In 1999 he was appointed as an Assistant Professor to the Department of Macromolecular Science and Engineering at Case Western Reserve University in Cleveland, Ohio and was promoted to Associate Professor with tenure in 2005 before becoming Full Professor in 2008. In 2009 he became the Kent H. Smith Professor of Engineering. He is the founding Deputy Editor of ACS Macro Letters, Director of the Institute for Advanced Materials at CWRU, and a Fellow of the Royal Society of Chemistry. In 2013 he received the Bayer Lectureship from the University of Southern Mississippi and the Lu Jiayi Lectureship from Xiamen University, China. He is an NSF-CAREER awardee and has published over 120 scientific papers, book chapters, reviews and patents.

His research interests focus on the potential of dynamic chemistry (covalent and non-covalent) in the construction and properties of new polymeric materials. His group works on supramolecular polymers and stimuli-responsive polymers including self-healing materials, metal-containing polymers, gels, biomaterials, surface assembly and developing new synthetic methods for the construction of complex polymeric architectures.

## New Cleveland Section Officers

The slate of officers for the fall election is as follows:

Chair-Elect: Dr. David Orosz

Treasurer: Dr. John Moran

Director: Dr. Nemi Jain & Dr. Genevieve Sauve

Trustee: Dr. Daniel Scherson

## Save the Date for the October Meeting

Save the Date and Register for an Evening of Aeronautics and Space!

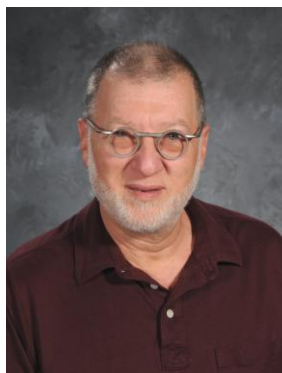
Our October 2014 meeting will include a tour of NASA Glenn Research Center followed by dinner at the 100th Bomb Group. **The date to save is Wednesday, October 22** with a check-in time of 4:45 p.m. at NASA Glenn. There is a maximum of 45 attendees that can take part in the tour, and we need to provide NASA with names and citizenships in advance so they can prepare badges. **If you wish to attend the tour, please send an email with your full name and citizenship status no later than 6:00 p.m. on September 20 to Theresa Nawalaniec at**

[t.nawalaniec@csuohio.edu](mailto:t.nawalaniec@csuohio.edu).

More details will be provided as the date gets closer.

## 2014 Irene C. Heller Award

**Russ Maurer of Hawken School receives Irene C. Heller Award from the Cleveland Section of the American Chemical Society**



**Gates Mills, OH**  
Hawken School Science Teacher Russell Maurer, Ph.D. was recently selected to receive the 2014 Irene C. Heller Award presented by the Cleveland Section of the American Chemical Society.

Section boundaries. Dr. Maurer received the Award at the April 9<sup>th</sup> meeting of the Cleveland Section.

A graduate of Princeton University, Dr. Maurer earned his Ph.D. in biochemistry from Harvard University and started his teaching career at Case Western Reserve University School of Medicine in 1982. He transitioned to high school teaching at Hawken School in 2001. Russ has taught chemistry, honors chemistry, AP chemistry, biology, algebra 1, and scientific research, with the majority of his effort devoted to chemistry. He has attended and presented at numerous materials science workshops for teachers organized by the ASM Materials Education Foundation, where the emphasis is on bringing hands-on materials science activities and demonstrations to the classroom. Recently, Russ brought to Hawken students a whole class inquiry approach to chemistry, a technique that fosters group planning and problem solving, experimental design skills, communication skills, and teamwork. His rapport with students, his dedication to the subject, and his workshop outreach activities are exemplary.

The Irene C. Heller Award recognizes an outstanding high school chemistry teacher who teaches at a school located within the Cleveland

**58th Annual SAS/ACS/AVS May Conference  
Wednesday, May 21 at John Carroll University**

Co-sponsored by the Cleveland Sections of Society for Applied Spectroscopy,  
American Chemical Society: Analytical Topics Group, and American Vacuum Society  
Partnering with the Microscopy Society of Northeastern Ohio

*Free conference pre-registration & lunch for all students*

***Morley Lecture***

**Stuart Rowan**

Structurally dynamic polymers: Using reversible bonds to access macroscopically-responsive materials

***Keynote Address***

**Doug Rohde, Elizabeth Balraj, Dennis Matejcic, Gary McKee**

The Cleveland Cyanide Murder Case: How Spectroscopy Helped To Solve a Crime

***Yeager Award***

**Program**

Synthesis and Negative Thermal Expansion Properties of  $Y_{2-x}L_{ax}W_3O_{12}$  ( $0 \leq x \leq 2$ ), **Hongfei Liu**, *University of Toledo, Dept. of Chemistry*

Speciation of Elemental Components in Food and Environmental Samples utilizing Ion Chromatography Coupled to ICP-MS, **Michael Plantz**, *ThermoFisher Scientific*

Ruthenium Oxide Based Combined Electrodes as Nitric Oxide Sensors Towards Measuring NO in Cystic Fibrosis, **Tiyash Bose**, *Cleveland State University, Dept. of Chemistry*

Interfacing Mass Spectrometry with Separation Methods for Synthetic Polymer Analysis, **Chrys Wesdemiotis**, *University of Akron*

Discovery of Magic Matrices and Novel Applications in Mass Spectrometry, **Sarah Trimpin**, *Wayne State University*

LC-MS/MS based Proteomics to study Protein Abundance, Modification, and Turnover, **Belinda Willard**, *Cleveland Clinic, Core Proteomics lab*,

Heavy Ion Mass Spectrometry -- from Bacteriophage HK97 Capsids to Whole Virion, **Mark Bier**, *Carnegie Mellon University*

Self-assembled Functional Anisotropic Nanomaterials: From Gold Nanorods to Carbon Materials, **Chenming Xue**, *Kent State University, Liquid Crystals Institute*

Raman Characterization of Cold-Drawn Poly-L-lactide: A Bio-Implant Material, **Venkata N K Rao. Bobba**, *Chemistry Department, Cleveland State University*

TEM Analytical Application Advancement, **Stephen Mick**, *Gatan Inc.*

Three Dimensional Morphology of Phase Separated Mixed Poly(tert-butyl acrylate)/polystyrene Brushes Grafted on Silica Particles in Selective Polymer Matrices, **Saide Tang**, *Case Western Reserve University, Dept. of Macromolecular Science & Eng.*

Controlling the Shape of Metal Oxide Nanostructures with Lyotropic Liquid Crystal Templates,  
**Matt Worden**, *Kent State University, Department of Chemical Physics*

Degradation of Transparent Conductive Oxides: Interfacial Engineering and Mechanistic Insights,  
**Heather Lemire**, *Case Western Reserve University, Dept of Materials Science & Eng*

AFM Analyses in Polymer Product Development & Process Troubleshooting,  
**Harlan Wilk**, *PolyInsight*

Infrared Analysis at the AFM Tip: NanoIR™,  
**Dave Voci**, *Anasys Instruments*

AFM as a Nano-viscometer,  
**Steve Eppell**, *Case Western Reserve University, Department of Bio-Medical Engineering*

Development and Use of Robust Probes for Tip Enhanced Raman Spectroscopy (TERS),  
**Jacob Scherger**, *University of Akron Department of Polymer Science*

Transmission Kikuchi Diffraction (TKD in SEM): Extending the Applications of EBSD via a Century-Old TEM Technique, **Warren MoberlyChan**, *Oxford, Inc.*

Transmission Electron Microscopy of Microstructure Evolution in Al<sub>x</sub>Cu<sub>100-x</sub> Alloys,  
**Jörg M.K. Wiezorek**, *University of Pittsburgh, Department of Mechanical Engineering and Materials Science*

In-situ Characterization of Polymers by DualBeam: Applications and Techniques,  
**Trevan Landin**, *FEI Company*

### **Biology Session:**

Melanopsin Ganglion Cells are Biplexiform with Dendrites that Extend into the Outer Retina,  
**Jordan Renna**, *University of Akron, Dept. of Biology*

Single-Cell Analysis: Fluorescence Microscopy Based Approaches to Connect Cellular Biochemistry to Cell Population Behavior, **Michael Konopka**, *University of Akron, Dept. of Chemistry*

Measurement of the cell thickness, cell volume and intracellular water with a standard transmission microscope,  
**Michael Model**, *Kent State University*

Engineering Tobacco Mosaic Virus for Applications in Nanotechnology, **Michael Bruckman**, *Case Western Reserve University, Dept of Bio-Medical Engineering*

The Ribosome Facilitates Protein Synthesis using Molecular Mimicry for Diverse Functions,  
**Derek Taylor**, *Case Western Reserve University, Medical School, Dept. of Pharmacology*

Structural Studies of Drp1 Provide Mechanistic Insight into Mitochondrial Fission,  
**Jason Mears**, *Case Western Reserve University, Dept. of Pharmacology*

Application of combined energy-dispersive X-ray spectroscopy and electron energy loss spectroscopy to investigate the iron architecture and properties in Myeloid Blood Cancers,  
**Valeria Visconte**, *Cleveland Clinic, Dept. of Translational Hematology & Oncology Research, Taussig Cancer Institute*

Examining Drp1 Conformational Changes and Domain Interactions in the Mitochondrial Fission Complex using cryo-EM, **Christopher Francy**, *Department of Pharmacology CWRU Medical school*

Utilizing Quantitative Microscopic Cytometry to Study the Complex Biological System,  
**Masahiro Hitomi**, *Cleveland Clinic, Dept. of Cellular and Molecular Medicine, Lerner Research Institute*

The Application of Imaging Analytics in Biomedical Research and Development,  
**Amit Vasanthi**, *ImageIQ, Inc.*

**Poster Session:**

Early stage scaling behavior of Ni-36Al-5(Cr,Pt) alloys undergoing Type II hot corrosion at 700°C,  
**Maryam Zahiri Azar**, *Case Western Reserve University, Dept of Materials Science and Engineer*

Specimen Preparation of Soft Matter Materials for Direct and Replica TEM Studies,  
**Min Gao**, *Kent State University, Liquid Crystal Institute*

Tailoring Particle Size, Microporosity and Surface Properties of Polymer and Carbon Spheres,  
**Nilantha P Wickramaratne**, *Department of Chemistry & Biochemistry, Kent State University*

**Biology Session:**

The CTP Complex: A Protector and Mediator of Telomere Homeostasis,  
**Harry Scott**, *Case Western Reserve University, Medical School, Dept. of Pharmacology*

**Acknowledgement of the John Bell Award winners at the dinner banquet  
Monetary Awards for best student papers**

**If you are interested in attending the May Conference: For paying online -  
<http://www.msneo.org/meetings.html> (MSNO site)**

**MSNO/ SAS/ACS/AVS members and affiliated paying by check please submit attached registration form or contact Nanthawan Avishai ([nxa157@case.edu](mailto:nxa157@case.edu), 216-368-4212)**

***PLEASE MAKE SURE TO SIGNUP EARLY OR EMAIL TO MAKE RESERVATIONS IF PAYING AT DOOR***

**REGISTRATION FORM FOR THE FIFTY-Eighth ANNUAL MAY CONFERENCE****May 21, 2014****DOLAN SCIENCE CENTER****John Carroll University**

20700 North Park Boulevard, University Heights, OH 44118

Co-sponsored by the Cleveland Sections of Society for Applied Spectroscopy,  
 American Chemical Society: Analytical Topics Group, and American Vacuum Society  
 Partnering with the Microscopy Society of Northeast Ohio

**Date:** \_\_\_\_\_

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**Last Name (Please Print Legibly) First Name Middle Initial**


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**Affiliation (Business or University)****Address****City State Zip Phone Number****Registration fee for Technical Sessions and Luncheon (PER PERSON) MEMBERSHIPS**
 Pre-register **Non Members 35\$**  **Pre-register Members 25\$**  ACS

 Pre-register Retirees, Unemployed \$15  AVS

 Pre-register Full-time Students (no Banquet) free  MSNO

 Full-time Students **On-Site** \$10  SAS

 **All On-Site** for Technical \$35

Sessions &amp; Luncheon

 Morley Award Lecture free

 Reception / Banquet \$25  Other \_\_\_\_\_
**(Available by Pre-registration Only)**

The banquet choices are:  Chicken and  Vegetarian. Please check your choice. The banquet will be held at **John Carroll University's Dolan Science Center**.

**Total Enclosed \$** \_\_\_\_\_

**Please do not send cash.** Pre-registration must be received by May 5, 2014. Mail completed forms and checks to:

**SAS/ACS/AVS**

Make checks payable to the  
**Society for Applied Spectroscopy**  
 Thomas Steele (440-347-8149)  
 The Lubrizol Corporation  
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 Wickliffe, OH 44092

**MSNO**

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**Microscopy Society of Northeast Ohio**  
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 Euclid Ave - White Room 330 Cleveland,  
 OH 44106-7204

**For Online Registration** <http://www.msneo.org/meetings.html>

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*Isotopics* is looking to highlight local chemistry professionals, companies, teachers, research groups, students, events, and more. If you have an idea for an *Isotopics* article, please contact the editor. *Isotopics* is also looking for local members to join our staff. Time commitments for staff members are minimal (a few hours a year!) and your contributions will be invaluable to our local section. If you are interested in joining *Isotopics*, please contact the editor.