



# American Chemical Society Susquehanna Valley Section

## FEBRUARY 2018 NEWSLETTER

SVS wishes all of its members a Happy New Year. The four hundred and forty second meeting of the Susquehanna Valley Section of the American Chemical Society will be held on Wednesday, February 7<sup>th</sup>, 2018 on the campus of King's College. The meeting will begin at 7:00 PM in the Mulligan Physical Science Center, room 206 and will be preceded by a 5:30 PM dinner at Rodano's Restaurant and Bar. The speaker will be Dr. Sergei S. Sheiko of University of North Carolina at Chapel Hill.

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### *“Programmable Design of Tissue-Mimetic Materials”*

Dr. Sergei S. Sheiko  
George A. Bush, Jr. Distinguished Professor  
Department of Chemistry  
University of North Carolina at Chapel Hill

Mimicking the mechanical behavior of biological tissues is vital for medical implants, tissue engineering, soft robotics, and wearable electronics. However, the unique combination of biological softness, strength, and toughness is difficult to recreate in synthetic materials. Current design strategies are predominantly *Edisonian* – exploratory mixing of assorted polymers, crosslinking schemes, and solvents, which is both inflexible in application and imprecise in property control. Herein, we present a universal materials design platform that leverages precision engineering of brush-like network architectures to program biological mechanical properties in solvent-free elastomers. By accurately controlling a triplet of independent architectural parameters (*polymer code*) and then adding compositional variables, we replicate jellyfish, lung, skin and arterial tissue stress-strain properties within archetypal poly(dimethylsiloxane) networks [1]. This design-by-architecture approach lays the foundation for a configurable synthetic engine that will be capable of encoding a broad range of tissue-mimetic mechanical phenotypes within any desired chemistry. Finally, because these materials are solvent-free, they will neither freeze in the Arctic nor dry in the Sahara. No liquid components will exist to be squeezed out in subsurface environments or to evaporate in the vacuum of outer space. This may lead to fundamental shifts in structural control of membrane diffusivity, interfacial adhesion, dielectric response, and self-healing applications.

This work has been supported by the National Science Foundation (DMR-1407645 and DMR-1436201)

1. Vatankhah-Varnosfaderani, M.; et al. Nature 2017, 549, 497–501.

## BIOGRAPHY OF DR. SHEIKO:

Professor Sergei Sheiko, Ph.D., Habil, aims at the design of novel polymeric materials with unique properties for biomedical implants, soft robotics, and enhanced oil recovery. He is currently focused on time-programmable materials with architecturally encoded physical properties. Sergei is a George A. Bush, Jr. Distinguished Professor of Chemistry and Fellow of the American Physical Society. Before joining the Chemistry Department at the University of North Carolina in 2001, Sergei has been working on his Habilitation in Polymer Chemistry at the University of Ulm in Germany and as Postdoctoral Fellow at the University of Twente in The Netherlands. He received a PhD degree in Polymer Physics from the Russian Academy of Sciences in 1991 and BS in Molecular and Chemical Physics from the Moscow Institute of Physics and Technology in 1986.

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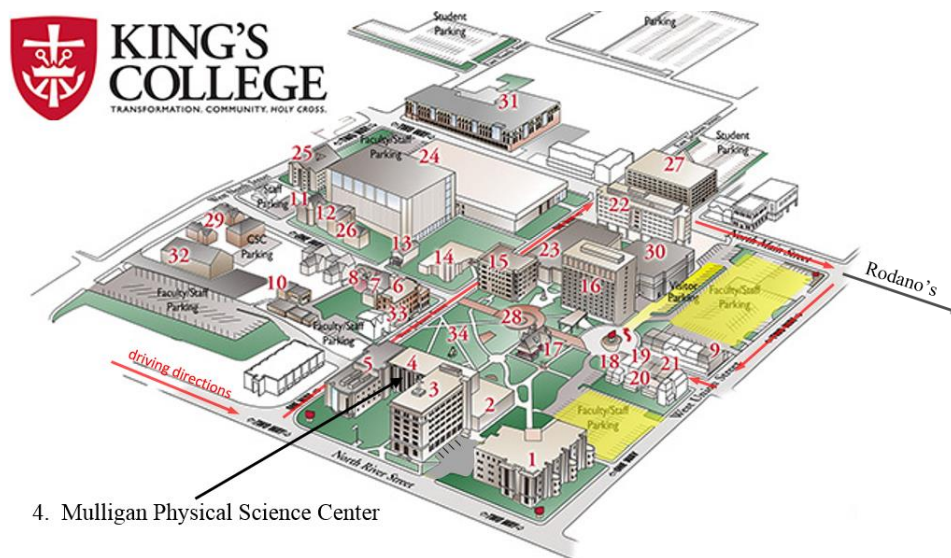
**DINNER:** 5:30 PM at [Rodano's Restaurant and Bar](#) on Public Square in Wilkes-Barre. The dinner will be a buffet and cost \$15 payable by cash or check. Please call or email reservations to Ron Supkowski ([ronaldsupkowski@kings.edu](mailto:ronaldsupkowski@kings.edu) or 570-208-5900x5733) by Monday, February 5.

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## DIRECTIONS TO KING'S COLLEGE:

Address: 133 N River St. Wilkes-Barre PA 18711

- From Route I-81, take Exit 170B which will put you on Route 309 North.
- Follow Route 309 and take exit 3 (Wilkes-Barre/Plains).
- Turn left off the exit ramp onto North River Street. Proceed about 1.5 miles, and you will see the Luzerne County Courthouse on your right. Continue through the light at the courthouse.
- Turn left at the next street, West Jackson Street. There is no traffic light at West Jackson Street, so do not go as far as the next light.
- Go through the stop sign, and at the first traffic light turn right onto North Main Street.
- Turn right at the next light onto West Union Street.
- Proceed to the next light and turn right onto North Franklin Street.
- The Visitors Lot is located to your right off the cul-de-sac.
- The lots colored yellow also have limited parking available.



For additional directions, visit <http://www.kings.edu/aboutkings/resources/directions>

## DIRECTIONS TO RODANO'S RESTAURANT AND BAR:

Address: 53 Public Square, Wilkes-Barre, PA 18701

- From Route I-81, take Exit 170B which will put you on Route 309 North.
  - Follow Route 309 and take exit 3 (Wilkes-Barre/Plains).
  - Turn left off the exit ramp onto North River Street. Proceed about 1.5 miles, and you will see the Luzerne County Courthouse on your right. Continue through the light at the courthouse.
  - Turn left at the next street, West Jackson Street. There is no traffic light at West Jackson Street, so do not go as far as the next light.
  - Go through the stop sign, and at the first traffic light turn right onto North Main Street.
  - Continue down North Main Street until you come to Public Square.
  - Rodano's will be on your left as you travel around and get to the opposite side of Public Square. They have street parking.
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## SECTION NEWS:

### 2018 LOCAL SECTION ELECTION:

All officers are up for reelection in calendar year 2018. You should have received a ballot. Please vote by Jan 31, 2018. A sincere Thank You to those chemists who volunteered as nominees.

### PENNSYLVANIA JUNIOR ACADEMY OF SCIENCE (PJAS):



The local PJAS regions will be holding their annual high-school science competitions. PJAS is always looking for local science professionals to volunteer to judge the STEM projects of the area's 7<sup>th</sup> through 12<sup>th</sup> grade students. Region 5's competition (the western half of the SVS section) will be Saturday, March 3<sup>rd</sup> at Susquehanna University and Region 2's competition (the eastern half of the SVS section) will on Saturday, March 3<sup>rd</sup> at Wilkes University. For more information visit the websites at <http://www.pjas.net/region5> or <http://www.pjas.net/region2>.

### NANO-MARM 2018:

Save the date: Sunday, 3 June 2018. NanoMARM will be a one-day regional meeting to be held in the Iacocca Center on the Lehigh University campus that includes the MARM Chemagination completion and the MARM awards banquet. More information will be forthcoming as plans move forward.

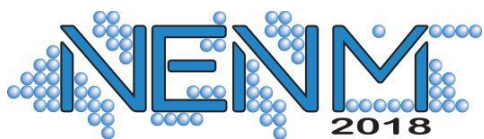
### 2018 CHEMISTRY OLYMPIAD:



U.S. National Chemistry Olympiad

The local 2018 U.S. National Chemistry Olympiad (USNCO) will be held on Saturday, April 21, 2018 from 9am to 2pm at Marywood University. If you know of a truly outstanding chemistry student please submit his or her name to Dr. Deanne Garver, [dgarver@maryu.marywood.edu](mailto:dgarver@maryu.marywood.edu), by the end of March. See the [local website](#) and [national website](#) for more details.

NERM 2018:



In 2018, the Northeast Region of the ACS is offering a focused, specialized regional meeting on “Nanomaterials: Applications and Environmental Impacts”. A call for abstracts has been issued. NENM 2018 is scheduled for June 1-3, 2018 and is being hosted by the Northern New York Section of the American Chemical Society. It will be held at Crowne Plaza Hotel & Resort, Lake Placid. See their [website](#) for more details.

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## NATIONAL ACS NEWS:

### NATIONAL MEETINGS:

The 2018 spring national meeting will be held in New Orleans, Louisiana from March 18-22. Early registration will close February 5. See the [website](#) for details and registration instructions.

The 2018 fall national meeting will be held in Boston, Massachusetts from August 19-23. A call for papers has been opened with many divisions having a deadline of Monday, Oct. 31. See the [website](#) for more details.

### ACT4CHEMISTRY:

The following message was sent out by Karen Garcia of Act4Chemistry:

In the past few months, we have asked you to reach out to your Members of Congress in support of scientific research funding for fiscal year (FY) 2018. We want to thank you for the great response we received from you. On your behalf nearly 950 letters were sent to Members of Congress.

Unfortunately, the Administration and Congress were unsuccessful in coming to an agreement on funding for FY 2018. As a result, a partial shutdown has gone into effect for the Federal Government, including the key science departments and agencies important to the members of ACS. The effects of this shutdown are still unknown; however, we believe the consequences for the sciences could be damaging.

As more information emerges, particularly regarding science departments and agencies, we will share the updates via the [Act4Chemistry Twitter account](#). Please see [ACS' statement on the government shutdown](#). If we identify an opportunity for you to take action, we will send those via the Act4Chemistry alert system.

In the meantime, if you have suggestions, feedback, or requests for assistance, you can contact us at [act4chemistry@acs.org](mailto:act4chemistry@acs.org)

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Susquehanna Valley Section Web Page: <http://departments.kings.edu/SusquehannaValleyACS>

Please send any comments about the monthly newsletter to Ron Supkowski, Section Secretary  
King's College 131 N River St Wilkes-Barre PA 18711 [ronaldsupkowski@kings.edu](mailto:ronaldsupkowski@kings.edu)

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