



ACS Local Section  
Portland

AMERICAN CHEMICAL SOCIETY

# Portland Section Meeting Notice

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January 2020

2020 January 9 Meeting Notice

## Nuclear Magnetic Resonance (NMR) of Polymers: Spectroscopy, Relaxometry, Diffusometry and Tomography

a talk presented by

**Haskell W. Beckham, Ph.D.**

Senior Director of Innovation for Columbia Sportswear

7:45 PM Thursday January 9, 2020

[click for Live stream 7:45 PM on Portland Section YouTube channel](#)

**Reed College Vollum Lounge**

3203 SE Woodstock Blvd, Portland, OR 97202

[map](#) (use East Parking Lot; Vollum is number 37 on map)

[Dinner Reservations—Dinners are \\$20 for early reservation](#)

Dinner reservations FIRM deadline **9 AM Friday Jan. 3**

**Please Note: Reed College catering requires reservations one week in advance.**

Prices increase to \$25 after the deadline! (including at the door)

**Schedule: 6:00 pm social • 6:45 pm buffet dinner • 7:45 talk**

Marcie Merritt, Chair  
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## Abstract

Nuclear magnetic resonance (NMR) is the basis of a suite of analytical methods that provide information on molecular structure, dynamics, and morphology across broad time and length scales. NMR methods are particularly powerful for characterizing polymeric materials and composites, for which the derived knowledge is critical for understanding structure-processing-property relationships. Spectroscopy is well-known for its application in molecular structure determination; for polymers this method is especially important for quantifying copolymer composition and tacticity. Relaxometry is useful for examining molecular dynamics in solution and in the solid state, important for establishing insight into such properties as gas permeation through polymeric membranes and food packaging. Diffusometry can be used to measure self-diffusion coefficients, helpful for investigating emulsions and reactions of small molecules with macromolecules. Tomography, better known as magnetic resonance imaging (MRI) and for its medical applications, allows measurements of spatial distributions of fluids in porous media, and through various contrast parameters, imaging of stress distributions in elastomers. In this talk, I will describe the various NMR methods with a focus on the information they provide, and then demonstrate their application with numerous examples, from textiles and nanocomposites to plastic bottles and salad dressing.

## Bio

Haskell Beckham is the Senior Director of Innovation for Columbia Sportswear. He earned a B.S. in textile chemistry from Auburn University and a Ph.D. in chemistry from the Massachusetts Institute of Technology (MIT). After graduating from MIT, Dr. Beckham was an NSF and then Humboldt postdoctoral fellow at the Max-Planck-Institute for Polymer Research in Mainz, Germany. He joined the faculty at Georgia Tech in 1993 and spearheaded the establishment of the Georgia Tech NMR Center. He has been awarded lecture fellowships from the Fiber Society and the Japan Society for the Promotion of Science. After a stint as a Principal Scientist at Exponent, a scientific and engineering consulting firm, Dr. Beckham joined Columbia Sportswear in 2017 where he continues to employ spectroscopic methods to solve material problems for product innovation and development.

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## Portland Section YouTube Channel Established

The Portland Section will be livestreaming and recording many of its future events. Our first event taped was the December 5 lecture by Professor Robert Strongin of Portland State University on “The Chemistry of Vaping.” It and all future streamed events can be found at the Portland Section’s new YouTube channel at this link: <http://bit.ly/acsportlandyoutube>

Please subscribe to our channel. Interested in hosting a watch party? Please contact Jim Tung ([jimtung@gmail.com](mailto:jimtung@gmail.com)). The Portland Section has funding to support gatherings of Portland chemists to remotely watch our events.

This live broadcast supported by the ACS Local Section Members Engaging Through Technology (METT) Grant.

## Donate to the Portland Section ACS

The Portland Section ACS always appreciates donations from members and the public. Donations are applied to scholarships and other activities that the Portland Section supports. Scholarship donations especially are appreciated.

Donations may be made directly to the Portland Section ACS on the [Square Pay site](#). To donate, Scroll to Donations to the Local Section or Operating Budget on the [Square Page](#).

In the next year the Executive Committee is considering increasing scholarships significantly. Your donation will provide additional capital in the endowment fund.

In addition to scholarships, the Section actively supports two SEED students. Donations to Project SEED are greatly appreciated. Donations also may be specified to support the Linus Pauling Medal Award, Oregon Science Startup Forum, or the Undergraduate Poster and Career Fair Symposium in the Fall.

Your donation will be personally acknowledged.

The Portland Section ACS is a 501(c)(3) nonprofit organization.