

MINNESOTA LOCAL SECTION

APRIL 18TH: AN INTRODUCTION TO THE UMINN CHARACTERIZATION FACILITY AND THE USE OF ATOMIC FORCE MICROSCOPY (AFM) TO STUDY SOFT MATTER

Speaker: Dr. Greg Haugstad, Principal Research Physicist and Director, Characterization Facility, University of Minnesota

Location: Black Forest Inn, 1 East 26th St., Minneapolis 55404 ([map \(http://blackforestinnmpls.com/pgs/info.php\)](http://blackforestinnmpls.com/pgs/info.php))

Time: 5 pm - Executive Meeting; 6 pm - Dinner; 7 pm - Presentation

Cost: \$20 member / \$5 student

Menu: Bratwurst/Strudel (vegetables and cream cheese in dough)/Maultaschen (potato and cheese perogi); Field greens salad, Spaetzel, Potato salad, Red cabbage, Dessert bars (Bavarian apple). Served family style

Meal Ticket: Go to the "Web Store" link to purchase meal reservations through PayPal

Deadline: April 14th, 2017

Abstract: This talk will firstly provide an overview of the Characterization Facility (CharFac) at the University of Minnesota, and secondly an introduction to atomic force microscopy (AFM) methods geared towards soft matter (synthetic, biological). The CharFac is UMinn's largest and most centralized facility for materials analysis. It is also used in the health, food and other bio-related sciences, as well as environmental, earth, and archeological sciences. Its external interactions are numerous and far-reaching: during a typical year roughly 50 companies and 20 external academic institutions (spanning the US but concentrated in Minnesota) use the CharFac for analytical services, training and hands-on applications. This talk will list the routes whereby externals may engage the CharFac's staff and technical capabilities, including cost issues. The AFM presentation will describe core modes of operation and exemplify their utility. Most examples from the speaker's research will be in biomedical applications such as lubricious or drug-eluting coatings and other soft matter such as biofilms and gels. Emphasis is on the micro- to nano-scale mapping of composition and properties, in addition to the usual 3D digital topography that one extracts with AFM.

Speaker Bio: Greg Haugstad has been active for 32 years in analytical research spanning nearly all classes of materials, from (i) pre-graduate work on temperature-dependent electrical properties of metals and microwave absorptive (stealth) nanocomposites, to (ii) graduate research in ultrahigh vacuum, synchrotron-based graduate research on electronic structure at semiconductor interfaces, to (iii) postdoctoral-fellow research on ionic crystals and soft / bio materials with a focus on nanoscale structure and tribo-mechanical properties. His research of the past 22 years has expanded from his postdoctoral work by emphasizing scanning probe methods, aqueous applications and industrial technologies. During this time Greg has interacted broadly with hundreds of collaborators and clients; published in dozens of scientific journals and books (~100 articles, chapters) and authored a Wiley monograph on AFM; given ~250 talks in conferences, seminars, workshops and short courses; co-organized ~30 conference symposia and workshops on materials characterization; and trained more than 700 CharFac users. As facilities director and life-long Minnesotan, he is keen on developing interactions with Minnesota companies and academic institutions.

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