



Akron Section of the American Chemical Society

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Friday, April 26 - Crano Award Lectures

Professor Bruce Amitage, Carnegie Mellon University

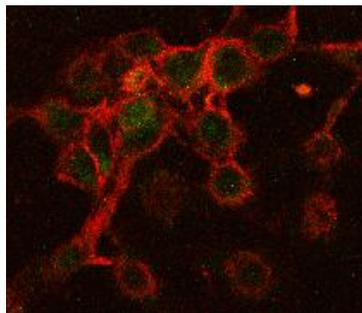
Afternoon Program

Mary Gladwin Hall room 111, The University of Akron

2:30 PM Lecture:

Fluorescence Imaging Reagents Based on RNA Aptamers, Synthetic Polymers and Fluorogenic Cyanine Dyes

Abstract:



The seminar will describe two fluorescent labeling technologies under development in our laboratory. The first technology relies on an RNA *aptamer* that binds to and activates fluorogenic cyanine dyes, giving either blue or red fluorescence, depending on the structure of the dye. The utility of this promiscuous aptamer is demonstrated by experiments in which it is fused to a separate RNA that recognizes a cell-surface receptor protein, leading to fluorescent labeling. Internalized and cell-surface

receptor can be distinguished temporally based on two successive labeling steps in which either blue or red fluorogen is applied to the sample.

The second part of the seminar describes recent work toward improved brightness from fluorescent labels. Whereas most fluorescent reagents (e.g. antibodies) are labeled with a few dyes, we have developed a hybrid material consisting of a polymeric scaffold from which is grafted double-helical DNA that acts as a host for fluorescent intercalating dyes. The resulting *nanotags* host >1000 dyes with minimal quenching and can be attached to antibodies for use in fluorescence microscopy, flow cytometry and dot blotting applications.

Evening Program

The Overlook, 1519 Overlook Rd, Kent OH 44240

5:30 PM Networking

6:30 PM Dinner

7:00 PM The John C. Crano Lecture:

DNA Nanotechnology: When Encoding the Genome Just Isn't Enough

Dinner Reservations:

RSVP to cmkausch@hotmail.com \$25 for members / public and \$10 for students. Please specify: 1) Peach Chicken, 2) Ribeye or 3) Eggplant parmesan



Abstract: *DNA Nanotechnology: When Encoding the Genome Just Isn't Enough.* The core of the Watson and Crick double-helical model for the structure of DNA is the complementary base pairing of purine and

pyrimidine units. This pairing also provides the foundation for the burgeoning field of DNA nanotechnology, where complementary DNA strands associate with one another to form complex 2- and 3-D shapes. This field was initially concerned with the synthesis of structured materials but has evolved to one that is increasingly driven by applications. Contributions from the Armitage lab to the use of DNA nanostructures in the field of biological imaging will be highlighted. Our work is illustrative of collaborations among scientists in two multidisciplinary research centers at Carnegie Mellon University: the Center for Nucleic Acids Science and Technology (www.cmu.edu/cnast) and the Molecular Biosensor and Imaging Center (<http://pathways.mbic.cmu.edu>).

Biography:

Professor Armitage is the Co-Director at the Carnegie Mellon Center for Nucleic Acids Science and Technology of Chemistry.