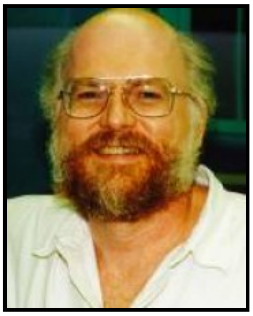

Other - Adjunct Faculty Talk in the Material Worlds Focus Area

Imaging Failures with X-rays and Neutrons: Flame Retardants and Batteries

Les Butler, Louisiana State University

Professor, Inorganic and Materials Science

Digital Media Center Theatre
November 15, 2013 - 11:30 am

Abstract:

The human visual system is wonderfully powerful at discovering patterns. Flame retardants and batteries are complex systems. We are developing new X-ray and neutron imaging procedures to observe complex systems and present massive data flow to the scientist in a friendly format. The talk will be a progress report.

Recent accomplishments include: a new algorithm for fast, robust processing of X-ray data from stepped-grating interferometers; upgrade of the LSU CAMD synchrotron tomography beamline with a 10-fold flux increase; acquisition of 2D movies of flame retardants burning and a fresh battery discharging; and viewing 3D data sets on multiple iPads. Near term goals are: acquisition of a laboratory tomography system; development of the Mathematica-VisTrails-Melete-KiwiViewer workflow; upgrade several beamlines (LSU, APS, and UC Davis neutron) with interferometers.

Speaker's Bio:

Les Butler received his BS (1977) from the University of Arkansas, then studied inorganic chemistry with Prof. Ted Brown at the University of Illinois at Urbana-Champaign. His PhD (1981) research was the construction of a novel solid-state NMR spectrometer and its applications to inorganic materials. Postdoctoral research (1981-93) in photochemistry and solid-state chemistry was done at CalTech with Prof. Harry Gray. He started at LSU as an assistant professor in 1983. His group built several solid-state NMR spectrometers and used magnet facilities at the National High Magnetic Field Laboratory and Los Alamos to study organometallic complexes, catalysts, polymer blends, biological samples, and environmental samples. He spent two years at the National Science Foundation (2001-02) as a program officer in chemistry. Now, his research program has moved in 3D+ imaging with X-ray and neutrons, mostly in materials science and polymer blends.

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