

R.I.T.

College of Science

Chester F. Carlson

Center for **IMAGING** SCIENCE

Seminar Series

Fire, Smoke, Bats and Stuff...A Physicists' Approach to Ecology

Robert Kremens

Senior Research Scientist, RIT



4pm, Wed., Oct. 24, 2007

Auditorium of the Center for Imaging Science

A suite of methods has been developed to measure physical parameters for insight into wildland fire. The talk will discuss attempts at quantifying the entire chain of primary response mechanisms and the random processes involved.

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Abstract

During the last seven years we have developed a suite of methods to measure physical parameters that provide unique quantitative insights into ecological questions surrounding wildland fire. Our goal is to provide a quantitative measure for a number of ecological effects from the fundamental physical parameters of fire radiated energy (FRE) and fire radiated power (FRP).

We have focused in particular on energy and power because these fundamental measures of the underlying physical process (combustion) are linked to all ecological effects: tree mortality, soil heating/damage, smoke and particulate production and dispersal, wildlife mortality and displacement, post-fire erosion and a host of other fire effects. I will discuss our attempts at quantifying the entire chain of primary response mechanisms, from combustion of wildland fuels to transport to organismal response. I will also hope to show some of the very random processes involved in these discoveries - quoting a friend 'insight is what results from the wreckage of your experiments'

Speaker Bio

Robert Kremens has been employed by the Rochester Institute of Technology (RIT) at the Center for Imaging Science since 2000. At RIT he has specialized in physical measurements of wildland fires for remote sensing and fire behavior purposes and in constructing new airborne and ground based systems to monitor the environment and wildland fire. Dr. Kremens received his B.S. (1975) in physics from the Cooper Union, M.S. and Ph.D. in physics from New York University, (1977, 1981) and a M.S. in environmental studies from the University of Rochester (2000). Before RIT, Dr. Kremens worked at the University of Rochester on the world's largest pulsed laser, building and analyzing nuclear and laser diagnostics for an inertial fusion experiment, at the United States Army Ballistics Research Laboratory in Aberdeen MD performing high energy density physics experiments, and at several industrial positions where he designed and constructed high speed data acquisition, test and imaging systems.