

# TEXAS SOUTHERN UNIVERSITY

## DEPARTMENT OF PHYSICS

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### Ionic Liquids – Science and Applications

Dr. Edward L. Quitevis  
Texas Tech University

Friday, March 22, 2013  
11:00 a.m. – 12:00 p.m.  
Room 151 Science and Technology Building

#### Abstract

Room temperature ionic liquids (ILs) are organic salts that have melting points below 100 °C. Because of their negligible vapor pressure, electrochemical and thermal stability, and wide liquid range, ILs have been extensively used in applications as “green” replacements for conventional solvents in separations, chemical synthesis, and electrochemistry or in sustainable technologies, such as CO<sub>2</sub>-entrainment, biomass processing, and dye-sensitized solar cells. In this talk I will briefly describe some of these applications and also fundamental studies in our laboratories to understand how the structure of the ions and liquid morphology affect physicochemical properties. Examples will include differential scanning calorimetric measurements of protein denaturation by ILs and the nonlinear optical spectroscopy and molecular dynamics simulations of small molecules in ILs.

#### Biography

Edward L. Quitevis was born and raised in San Francisco, CA. He received a BS degree in Chemistry from UC Berkeley in 1974, an AM degree in Physics from Harvard University in 1976, and a PhD degree in Chemical Physics from Harvard University in 1981. He did his dissertation work under the direction of Professor Dudley R. Herschbach (co-winner of the 1986 Nobel Prize in Chemistry) on molecular beam studies of electron transfer to weakly bound complexes. After receiving his PhD he did postdoctoral work at the University of Toronto under the direction of Professor Geraldine A. Kenney-Wallace on the picosecond spectroscopy of liquids. In 1984 he joined the Department of Chemistry & Biochemistry at Texas Tech University where he is currently a full professor of chemistry and joint professor of physics. His research interests include nonlinear optical spectroscopy, dynamics of complex fluids, supercooled liquids and the glass transition, and the physical chemistry of ionic liquids.

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