



# PHYSICS COLLOQUIUM

## Experiments on the Newly Functioning Spallation Neutron Source at Oak Ridge National Lab



### Haskell Taub

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Host: Bruch

**Abstract:** We will discuss the present status of instrumentation for performing neutron scattering experiments on condensed matter at the Spallation Neutron Source (SNS) at Oak Ridge National Laboratory. The talk will focus on the high-energy-resolution quasielastic neutron scattering spectrometer BASIS, which can be used for investigating molecular diffusion in both solids and liquids and is one of three instruments currently available in the external user program. With the SNS operating at about 40% of full power on target, we discuss how BASIS in its present configuration complements existing capabilities for quasielastic neutron scattering at steady-state reactors. As an example, we show how measurements on BASIS help to provide a new “spin” on a problem in the dynamics of molecular crystals that dates back to the 1930s: the nature of solid-solid phase transitions to “rotator” phases that precede the melting of alkane crystals.



2241 Chamberlin Hall • Friday, November 14, 2008 • 4:00 P.M.  
cookies & coffee served at 3:30 p.m.