

Colloquium Notice

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*Measurement of the Rate of Molecular Diffusion of
Water Confined in Elastin*

Q space Nuclear Magnetic Resonance imaging is a well-known non-invasive experimental technique allowing for structural investigations of a variety of complex systems relevant to problems in industry, material science and biology. The technique allows one to accurately measure the morphology of a confining pore and molecular diffusion rate of mobile molecules within interstices of a structurally complex system. In our laboratory we have recently designed a variable temperature NMR microscope capable of delivering gradient pulses on the order of 50,000 G/cm allowing for high resolution (less than 1 micrometer) scattering studies. In this work we apply this hardware to study the rate of molecular diffusion of water in purified bovine nuchal ligament elastin. Elastin is an insoluble and highly cross-linked protein in the extra cellular matrix responsible for the elastic properties of vertebrate tissues. While all models for elasticity require water as a plasticizer, no direct experimental study of the molecular dynamics of water has yet been performed. In this talk I will discuss q-space imaging, the measurements we performed, and the implications of our findings.

Sunday

May 27, 2007

Starts at 12:15 PM

Coffee at 12:00 PM

Physics Conference Room, SB B326