

Physics Seminar

Friday, 3:30 pm April 22, 2011

A Resonant Ultrasound Spectroscopy Study Of Novel Materials: Hydrogen-Storage Alloys, Random Alloys Nanocrystals, And Quasicrystals

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The elastic properties of materials provide the basis for understanding many of their physical characteristics. Beginning with a general overview of elasticity and of the experimental technique of Resonant Ultrasound Spectroscopy (which involves the excitation and detection of the vibrational eigenmodes of objects with well-defined shapes), results will be presented of studies of several novel materials: a Laves phase C15 cubic material that undergoes a Martensitic phase transition when cooled, a random alloy, a nanocrystal, and a quasicrystal. Resonant Ultrasound Spectroscopy (RUS) is an ideal technique for the characterization of the elastic properties of these types of materials since RUS is non-destructive and can work with very small sample sizes. The RUS technique is also sensitive to ultrasonic loss, and these measurements provide information on internal mechanisms that dissipate energy such as the movement of light interstitial atoms or the movement of dislocations.

Location: Ross 0220 (Ground level of Ross Hall)
(Refreshments will be served at 3:20pm.)

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