High Temperature Probe for Resonant Ultrasound Spectroscopy

Gary A. Lamberton, Jr. and H. E. Bass
University of Mississippi
National Center for Physical Acoustics
1 Coliseum Drive
University, MS 38677
Phone: 662-915-5764
Email: ncpagary@olemiss.edu

Resonant ultrasound spectroscopy (RUS) has proven to be a useful tool for geologists and material scientists probing a variety of systems. By measuring the vibrational spectrum of a material it is possible to calculate all of the elastic moduli through a single measurement. Additionally, RUS is one of the most sensitive means of investigating phase transitions. Though high temperature RUS measurements have been made by geologists as early as 1988 and as high as 1825 K, few material scientists have utilized the potential of this measurement. The probe design presented should enable RUS measurements to 1000 K allowing a study of many engineering materials at elevated temperatures where they may be employed.