

## Ultrasonic Measurements of Sound Velocities at High Pressures and Temperatures

**FRIDAY FEB 28**

Zoom: [bit.ly/FORCEseminar](https://bit.ly/FORCEseminar)

**12 PM MST/AZ**

11 am Pacific, 2 pm Eastern

Following the invention of piezoelectric transducers and the development of ultrasonic interferometry techniques at the Bell Telephone Laboratory, several U.S. mineral physics labs began in the 1960s to utilize these developments to measure sound velocities in rocks and minerals. Over the subsequent half century, the ultrasonic techniques have continued to develop and the velocity measurements have been conducted at ever-increasing pressures, now reaching conditions of the lower mantle. This talk will summarize this history from my personal perspective, from my 1966 experiments with Ed Schreiber on hematite to 3 kilobars [0.3 GPa] in a gas high-pressure apparatus in the Mineral Physics Laboratory at Lamont to the most recent work on the same hematite specimen by Baosheng Li and his postdoc Ran Wang to 13 GPa [130 kilobars] in our 1000-ton uniaxial split-cylinder apparatus [USCA-100] in the Stony Brook High-Pressure Laboratory. Many recent studies of the sound velocities of minerals at high pressures and temperatures have been conducted at the synchrotron X-radiation facilities of the U.S. Department of Energy, including the National Synchrotron Light Source [NSLS] at the Brookhaven National Laboratory and the Advanced Photon Source [APS] at the Argonne National Laboratory.



### BOB LIEBERMANN

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After earning his B.S. at Caltech, Dr. Liebermann spent 7 years at Lamont studying underground nuclear explosions and learning to measure sound velocities in the lab of Orson Anderson and Ed Schreiber. He then spent 6 years at the Australian National University to make specimens of high-pressure phases in the lab of Ted Ringwood. Since 1976, Dr. Liebermann has been on the faculty of Stony Brook University, where he taught undergraduate and graduate courses and built a high-pressure acoustics laboratory. Dr. Liebermann served as President of COMPRES from 2003–2010.

## SEMINAR SCHEDULE \_\_\_\_\_ Fridays at 12 pm MST/AZ

### March 28

**Rebecca Fischer** Department of Earth and Planetary Sciences, Harvard University

### April 18

**Asmaa Boujibar** Geology Department, Western Washington University

### May 2

**Damanveer Grewal** School of Molecular Sciences, School of Earth & Space Exploration, Arizona State University