

Abstract Submitted  
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**Evaluation of Elastic Properties of Iron in Diamond Anvil Cell by a Laser Ultrasonics Technique up to 52 GPa**<sup>1</sup> ALEXEY SEMENO, General Physics Institute, PAVEL ZININ, KATHERINE BURGESS, University of Hawaii, VITALI PRAKAPENKA, University of Chicago — In this report, we present results on measurements of shear and longitudinal wave velocities in iron under high pressure up to 52 GPa. The measurements were conducted using laser ultrasonics (LU) in diamond anvil cells (DAC), LU-DAC technique.<sup>2</sup> The iron sample is attached to the lower diamond and separated from the upper diamond by NaCl. The way the sample is loaded in DAC allows measurements of acoustical wave velocities with two different configurations: acoustic waves propagated inside the specimen are excited and detected by a pump laser and a probe laser located (a) on the same side of the specimen or (b) on the opposite sides of the specimen. We found that the signals detected at the configuration (a) are similar to those measured without NaCl and show the arrival time of the longitudinal and shear waves.<sup>3</sup> In addition to skimming and bulk acoustic modes observed and analyzed in a previous study,<sup>4</sup> the detection of head waves is reported. In configuration (b), the signal shows arrival of the longitudinal wave and a set of the Lamb modes.

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<sup>2</sup>N. Chigarev, P. Zinin, L. Ming, G. Amulele, A. Bulou, V. Gusev, *Appl. Phys. Lett.* 93 181905 (2008).

<sup>3</sup>Chigarev, *Appl. Phys. Lett.*

<sup>4</sup>Chigarev, *Appl. Phys. Lett.*

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