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Impulsive stimulated scattering on metal and semiconductor interfaces under high pressure ERIC CHRONISTER, University of California, Riverside, BRUCE BAER, Lawrence Livermore National Lab, MASASHI YAMAGUCHI, Rensselaer Polytechnic Institute — Impulsive stimulated scattering (ISS) is used to measure the orientation dependence of surface acoustic wave velocities on crystalline metal and semiconductor surfaces. ISS coherently drives surface acoustic modes yielding a relatively large scattering efficiency [1]. ISS data is obtained continuously from the Rayleigh surface wave (RSW) branch through the pseudo RSW branch, which is typically not possible with classical Brillouin scattering. The ISS technique is found to be a robust non-contact method of probing the surface acoustic properties of metal and semiconductor crystalline interfaces. Orientationally resolved acoustic velocity data on crystal surfaces can be used to determine the bulk elastic constants of the material and ISS results were also found to be more robust than Brillouin scattering with respect to surface quality. At high pressure, the solid surface is in contact with a pressure-mediating fluid (nitrogen in this case), and the liquid-solid interface supports the propagation of a Sholte surface mode in addition to the generalized Rayliegh wave, both of which are resolved in the ISS power spectrum. 1] Rogers, Maznev, Banet, Nelson, Annu.Rev.Mater.Sci.30, 117, 2000.

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