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kinetics of solid to solid phase transitions in bismuth RICKY CHAU, FREDERICK STREITZ, Lawrence Livermore National Laboratory — The role of kinetics in determining the time scale for transition from one phase to another is not known, but has been cited as contributing to the often observed discrepancy between phase boundaries determined in dynamic versus static pressure experiments. In this study, we demonstrate the use of real-time electrical conductivity as a phase diagnostic by presenting preliminary measurements of the conductivity of Bi under dynamic loading conditions. By exploiting the drastic variation in electrical conductivies among the low pressure phases, we are able to correlate changes in measured conductivity with phase changes in the sample. We will discuss the observed timescale for the phase transitions as well as possible effects due to the competition of phases. In addition, we will present results from experiments where both the electrical conductivity and particle velocity profiles are measured simultaneously, allowing observation of both the bulk and the local response of the system.

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Ricky Chau
Lawrence Livermore National Laboratory

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