

Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Electron-phonon interaction of GaAs nanowires under pressure

WEI ZHOU, Key Laboratory of Materials Physics, Institute of Solid State Physics, Chinese Academy of Sciences, JIAN-BO ZHANG, Department of Physics, South China University of Technology, XIN-HUA LI, YUQI WANG, XIAOJIA CHEN, Key Laboratory of Materials Physics, Institute of Solid State Physics, Chinese Academy of Sciences, ALEXANDER GONCHAROV, Geophysical Laboratory, Carnegie Institution of Washington — We present resonant Raman scattering (RRS) investigation of wurtzite and zinc-blende phase GaAs nanowires under hydrostatic pressure up to 30 GPa. The Raman spectra are excited by 532 nm and 488 nm laser lines. High order longitudinal optical modes 2LO and 3LO are observed under the resonant conditions. Pressure dependence of band gap of WZ and ZB nanowires has been obtained from the corresponding resonant pressures, and band gap of WZ nanowires is found to be larger than that of ZB nanowires. When applying pressure at 21 GPa, Raman signals of WZ and ZB phases disappear, manifesting phase change to a high-pressure phase.

Wei Zhou
Key Laboratory of Materials Physics, Institute of Solid State Physics,
Chinese Academy of Sciences

Date submitted: 13 Nov 2012

Electronic form version 1.4