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**Se-precipitation in ZnSe under moderate-power laser-irradiation at high-pressure** G.P. LINDBERG, R.E. TALLMAN, Dep. of Physics, Univ. at Buffalo, Buffalo, NY, USA, R. LAUCK, M. CARDONA, Max Planck Institut für Festkörperforschung, Stuttgart, Germany, B.A. WEINSTEIN, Dep. of Physics, Univ. at Buffalo, Buffalo, NY, USA — We report evidence for the formation of Se inclusions in ZnSe under laser-irradiation during pressure-Raman experiments. Spectra of high-quality  $^{68}\text{Zn}^{76}\text{Se}$  crystals are recorded at 300K for pressures of 0-13GPa using 647nm excitation at powers of 10 and 100 mW (focal spot  $\sim 50\mu\text{m}$ .) For runs at the higher power a new Raman peak appears at 1.8 GPa, and shifts to lower energy at the rate  $-3.5\text{ cm}^{-1}/\text{GPa}$  with further increase of pressure. Its frequency,  $228\text{cm}^{-1}$  at 1.8GPa, is within  $7\text{ cm}^{-1}$  of the A1 and E'' Raman peaks in trigonal Se, which both exhibit negative, strongly non-linear, pressure shifts.<sup>1</sup> In particular, the pressure-shift of the new ZnSe peak gives a reasonable fit to the average dependence of the Se A1 peak over the range 2-8 GPa. No assignment to any of the ZnSe acoustic modes (one- or two- phonon) that also soften with pressure is feasible for the new peak. It is most likely related to the Se A1-mode in Se-inclusions, whose tendency to precipitate appears to increase with pressure.

<sup>1</sup>W. Richter, *et. al.*, *phys. stat. sol. (b)*56, 223(1993); K. Aoki, *et. al.*, *J. Phys. Soc. Japan* 48, 906 (1980).

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