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 $^{68}$Zn$^{76}$Se crystals are recorded at 300K for pressures of 0-13GPa using 647nm excitation at powers of 10 and 100 mW (focal spot ~ 50µm.) 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, 228cm$^{-1}$ at 1.8GPa, is within 7 cm$^{-1}$ of the A1 and E $''$ Raman peaks in trigonal Se, which both exhibit negative, strongly non-linear, pressure shifts.$^1$ 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.