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High Pressure Raman Spectroscopic Studies on $CuInTe_2$ Quantum Dots[1] HOWARD YANXON, RAVHI KUMAR, University of Nevada Las Vegas - HiPSEC, HIPSEC - UNIVERSITY OF NEVADA LAS VEGAS TEAM — High pressure Raman spectroscopy studies were performed on $CuInTe_2$ Quantum Dots (QD) up to 7.7 GPa. At ambient conditions, the Raman modes of the QD loaded into a high-pressure diamond anvil cell (DAC) were observed at 125.1 cm^{-1} (A_1 mode) and 142.8 cm^{-1} (B_2 or E mode). As the pressure increases, the A_1 mode starts to split above 2 GPa and shifts to the left as indication of a structural change. A pressure-induced phase transition was observed around 2.9 GPa due to the collapse of the modes with the appearance of a new Raman peaks. The phase transition observed in our experiments compare well with the characteristics of bulk and larger nanoparticles. Further, it could be concluded that the phase transition pressure observed mainly depends on the particle size.

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