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Optical Absorption and Luminescence Studies of Sn Doped ZnO Single Crystals MICAH HASEMAN, MATTHEW KUSZ, KEITH MCBRIDE, POONEH SAADATKIA, FARIDA SELIM, Bowling Green State University — High quality undoped and Tin doped Zinc Oxide (ZnO:Sn) single crystals were grown by the chemical vapor transport (CVT) method and studied by optical absorption and thermo-luminescence (TL) spectroscopies. Significant changes in TL and absorption spectra were induced by Sn doping. By varying Sn concentration, the color of the samples has changed from colorless to dark blue. Optical absorption measurements revealed no change in the band gap and indicated that the dark blue color is due to a broad peak beyond 600 nm. Following our recent approach in applying low temperature TL in measuring donor ionization energies in ZnO, inspection of TL glow spectroscopy showed a change in the donor ionization energy and density after doping.

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