Abstract Submitted
for the PSF17 Meeting of
The American Physical Society

**Effect of CdSe Nanoparticles on the Optical Properties of Bismuth Borate and Boro-tellurite Glasses** OWEN HUFF, SAISUDHA MALLUR, P.K. BABU, Western Illinois University — The inclusion of cadmium selenide nanoparticles in bismuth borate and bismuth boro-tellurite glasses causes changes in optical band gap and fluorescence spectra that dependent on the size of the nanoparticles, which can be increased by annealing. We started with ionic compounds in powder form, and then melted, quenched, and polished samples into glass pieces. Then using a furnace, we annealed five samples (of both bismuth borate and bismuth boro-tellurite) for 3, 6, 11, 16, and 26 hours. We recorded the optical absorption spectra using a Varian Cary 5 UV-VIS-IR spectrometer, and fluorescence spectra using a CCD spectrometer. The samples were excited with a 380-nm wavelength Titanium-Sapphire laser in order to observe the fluorescence spectra. The optical band gap of the samples was determined from the absorption edge data. The fluorescence spectra was deconvoluted in order to identify the characteristic emission peaks of the CdSe nanoparticles, and to observe the change in peak wavelength and width of fluorescence maximum. The optical band gap, the peak wavelength and width of fluorescence maxima vary with the annealing hours. Through analysis of the characteristic emission peaks of the CdSe nanoparticles, we also determined the approximate size of these nanoparticles.

Owen Huff
Western Illinois Univ

Date submitted: 23 Oct 2017 Electronic form version 1.4