Abstract Submitted
for the PSF16 Meeting of
The American Physical Society

Fluorescence studies of Sm $^{3+}$ and Sm^{3+} +Eu^{3+} co-doped bismuth telluro-borate glasses TING CHEAN KHOO, PANAKKATTU BABU, SAISUDHA MALLUR, Western Illinois University — Tellurite glasses doped with rare-earth ions are important materials for lasers and optical fibers. The telluro-borate glasses have high refractive index, good rare-earth ion solubility and excellent transparency in a wide wavelength range. The heavy metal bismuth oxide plays a significant role in enhancing the fluorescence of rare earth ions. The effect of tellurium content on the optical properties of Sm^{3+} and Sm^{3+}+Eu^{3+} doped bismuth telluro-borate glasses with the composition $30Bi_2O_3$: (69.5-x)B_2O_3: xTeO2: $0.5Sm_2O_3$ and $30Bi_2O_3$: (69-x)B_2O_3: xTeO2: $0.5Sm_2O_3$: $0.5Eu_2O_3$ (x = 10, 20, 30 mol%) has been studied. The fluorescence spectra are obtained by exciting the glasses by a laser at 459 nm. Using radiative transition probability derived from the absorption spectrum of the sample, in conjunction with the fluorescence spectra, stimulated emission cross section for the intense band is calculated. The stimulated emission cross section is an important parameter in designing laser materials. The radiative transition probability and stimulated emission cross section are found to increase with increase in tellurium content.

Saisudha Mallur
Western Illinois University

Date submitted: 29 Sep 2016 Electronic form version 1.4