

Abstract Submitted  
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**Down- and Up-Conversion emissions from  $\text{Er}^{3+}/\text{Yb}^{3+}$  co-doped tellurite glass for solar cell application**<sup>1</sup> MADHAB POKHREL, UTSA, DEBNATH RADHABALLABH , School of Laser Science and Engineering, DHIRAJ SARDAR, UTSA — Monogap solar cells, like silicon solar cells, are unable to absorb the entire solar spectrum. Importantly, photons with high energy are known to have thermalization losses and photons with an energy lower than the band gap energy cannot be absorbed. Materials which convert one UV photon into one or two lower energy photons (down-converters) and materials which convert two or more sub-bandgap photons into high energy photons (up-converters) are of great interest for photovoltaic application. In this work, three properties have been analyzed for  $\text{Er}^{3+}/\text{Yb}^{3+}$  co-doped on tellurite glass: (a) we investigate its potential application as a up and down conversion material, (b) investigate the suitability as an enhancer in various solar cells based on band gap engineering, and (c) model to utilize these unique spectroscopic properties in future photovoltaic device as a fluorescent collectors.

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