Synthesis and Preliminary Photoelectrochemical Study of Silver Antimony Sulfide Semiconductor

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Silver antimony sulfide (Ag_3SbS_3), a p-type semiconductor (SC) material has been synthesized in a solid state route with silver, antimony and sulfur powder precursors in a high temperature oven by gradually increasing the temperature. The product was characterized by powder X-ray diffraction (XRD). Ag_3SbS_3 has a small band gap (E_g) of 2.0 eV and is suitable to absorb solar energy and produce electron-hole (e^--h^+) pair which are good candidates for water splitting. Photoelectrochemical study was carried out making films on fluorine-doped tin oxide (FTO) substrate. The preliminary results from photoelectrochemistry and characterization will be presented.