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Synthesis and Characterization of Liquid Phase Exfoliated Tungsten Disulphide (WS_2) Flakes[1] MILINDA WASALA, SUJOY GHOSH, ANDREW WINCHESTER, LOGAN MOORE, Department of Physics, Southern Illinois University Carbondale IL-62901, USA, BARBARA NICHOLS, MADAN DUBEY, Army Research Lab (ARL), Adelphi, MD 20783 USA, SAIKAT TALAPATRA, Department of Physics, Southern Illinois University Carbondale IL-62901, USA — We report on the synthesis of 2D thin flakes of WS_2 obtained from liquid phase exfoliation of their bulk powder. Temperature dependent conductivity measurement as well as photo response of thin films prepared from these flakes will be presented. Our preliminary data, studied with in the temperature range 320K $< T <$ 25, indicates that under a constant laser powers of wavelength = 658 nm, photocurrent (I_{ph}) decrease with decreasing temperature and becomes temperature independent at low temperatures. Further, it was found that $I_{ph} \sim$ (laser intensity)$^{\gamma}$ with $0.5 < \gamma < 1.0$. These findings will be discussed under various available models related to photoconductivity in semiconductors.

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