## Abstract Submitted for the OSF19 Meeting of The American Physical Society

Hydrothermal Synthesis of Carbon doped Sodium Tantalates.<sup>1</sup> CHRISTOPHER SAUNDERS, Union College Barbourville, KY, ROMA KARNA, PRIYA KARNA, University of Kentucky, Lexington, KY, DEEPA GURAGAIN, University of Memphis, Memphis, TN, SUNILU KARNA, Union College Barbourville, KY — Experiments were conducted to optimize the growth parameters for doping of sodium tantalates with carbon in energy efficient hydrothermal process. We have successfully grown sodium tantalate nanocubes at low temperature of 140° C for 15 hours in rich alkaline atmosphere and able to dope them with carbon to enhance their visible light photocatalytic activities. Sodium tantalate contains perovskite structure of cubic crystal with an average size of 80 nm. The morphological, compositional, structural, thermal properties, band gap, and photocatalytic activities of as-synthesized doped and undoped sodium tantalate (NaTaO<sub>3</sub>) nanocubes were characterized by scanning electron microscope (SEM), x-ray powder diffraction (XRD), thermal gravimetric analysis (TGA), ), Fourier Transform Infrared Radiation Spectrophotometer (FTIR) and UV-vis spectrophotometer. The optical bandgap of undoped sodium tantalates were found to be 4 eV and upon doping with carbon their bandgap reduces to 3.6 eV.

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Date submitted: 12 Sep 2019 Electronic form version 1.4