Abstract Submitted for the MAR08 Meeting of The American Physical Society

Optical, Electronic and Structural Properties of $\mathbf{Y}_x\mathbf{Sc}_{1-x}\mathbf{N}$ ROBERT BRUCE VANDOVER, JOHN GREGOIRE, STEVE KIRBY, Cornell University — Semiconducting $\mathbf{Y}_x\mathbf{Sc}_{1-x}\mathbf{N}$ thin films are reactively sputtered onto a variety of surfaces, resulting in films varying from nanocrystalline to epitaxial (single crystalline). As a function of composition, we investigate the variations in the crystalline lattice, Hall mobility, absorptivity and direct and indirect band gaps. We find this material to be a solid solution semiconductor across the entire composition range. The tunable band gap and high absorptivity of this semiconductor make it an interesting photovoltaic material. Details on this application will be presented as well as prospects of this material's use as the host for ferromagnetic transition metals.

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Date submitted: 01 Dec 2007

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