

Abstract Submitted  
for the MAR10 Meeting of  
The American Physical Society

**Synthesis and optical studies of CdSe nanoparticles/ferroelectric thin film hybrid materials**<sup>1</sup> ELIZABETH BUSHONG, J.K. KREBS, KATHERINE E. PLASS, Franklin and Marshall College — Ferroelectric thin films have attracted recent research attention due to their promise as thin film photovoltaic devices. Due to the large bandgap of the ferroelectric, these films absorb weakly in the region of the solar spectrum. Meanwhile, semiconductor nanoparticles exhibit tunable absorption which can be tailored through size-selective synthesis techniques. We report on low-temperature chemical synthesis to incorporate CdSe nanoparticles into a ferroelectric thin film. Optical absorption and emission measurements confirm that the CdSe particles in solution have a diameter of 4 nm and retain that size through the film processing. AFM images of the films show that they are crack-free and of uniform thickness. These hybrid materials form a model system for the study of charge separation in semiconductor nanoparticles under the influence of an external field.

<sup>1</sup>E.J.B. would like to acknowledge the support of the Clare Boothe Luce Program

Elizabeth Bushong  
Franklin and Marshall College

Date submitted: 20 Nov 2009

Electronic form version 1.4