Abstract Submitted for the OSF06 Meeting of The American Physical Society

Polyethylene films doped with nanophosphors for green house JUSTIN WILHELM, DAVID HUNTER, Department of Chemistry, Lock Haven University of Pennsylvania, TYLER LAUDENSLAGER, Department of Biology, Lock Haven University of Pennsylvania, DONGDONG JIA, Department of Geology and Physics, Lock Haven University of Pennsylvania, LHUP NANOTECH GROUP $TEAM - CaAl_2O_4:Eu^{2+}$ and $CaSCl:Eu^{2+}$ nanophosphors are prepared by using a salted sol-gel method and a stabilized precipitation method respectively. The absorption of the $CaAl_2O_4:Eu^{2+}$ nanophosphor is in the UV to deep blue (200-400nm) range. Its emission is at 450 nm. The absorption of the $CaSCl:Eu^{2+}$ nanophosphor is broad from deep UV to orange. Its emission is at 670 nm which is exactly where photosynthesis absorption peak at. We are going to embed these nanophosphors in transparent polymer materials for a greenhouse. Using the colloidal suspension properties of Xanthan Gum, isolated from Xanthomonas campestris the desiccation resistance of the polymer will be utilized. Xanthan Gum observes low shear and high viscosity in aqueous solutions that will allow a thermal stabilization of a heavy metal phosphor-polymer colloid. The influence of pH on the system will be independent of the nucleation of the phosphor. By dispersing nanophosphors with Xanthan, transparent red and blue light enhance greenhouse film can be prepared.

> Dongdong Jia Department of Geology and Physics, Lock Haven University of Pennsylvania

Date submitted: 22 Sep 2006

Electronic form version 1.4