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The Role of ZnO Particle Size, Shape and Concentration on Liquid Crystal Order and Current-Voltage Properties for Potential Photovoltaic Applications[1] LUZ J. MARTINEZ-MIRANDA, JANELLE BRANCH[2], ROBERT THOMPSON, JEFFERSON W. TAYLOR, LOURDES SALAMANCA-RIBA, University of Maryland - College Park — We investigate the role order plays in the transfer of charges in ZnO nanoparticle - octylcyanobiphenyl (8CB) liquid crystal system for photovoltaic applications as well as the role the nominally 7x5x5nm^3 or 20x5x5nm^3 ZnO nanoparticles play in improving that order. Our results for the 5nm nanoparticles show an improvement in the alignment of the liquid crystal with increasing weight percentage of ZnO nanoparticles[1]. Our results for the 7x5x5 nm^3 sample show that the current is larger than the current obtained for the 5 nm samples. We find that order is improved for concentrations close to 35% wt ZnO for both the 7x5x5 nm^3 and 20x5x5 nm^3. We have analyzed the X-ray scans for both the 7x5x5 and the 20x5x5 nm^3 samples. The signal corresponding to the liquid crystal aligned parallel to the substrate is much smaller than the peak corresponding to the liquid crystal aligned approximately at 70 $^\circ$ with respect to the substrate for the 7x5x5 nm^3 sample whereas this same peak is comparable or more intense for the 20x5x5 nm^3 sample. 1. L. J. Martínez-Miranda, Kaitlin M. Traister, Iriselies Meléndez-Rodríguez, and Lourdes Salamanca-Riba, Appl. Phys. Letts, 97, 223301 (2010).

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[X] Prefer Oral Session
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