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ZnO Nanowire Arrays with Liquid Crystals for Photovoltaic Applications¹ LOURDES SALAMANCA-RIBA, JOSHUA TAILLON, LUZ MARTINEZ-MIRANDA, Materials Science and Engineering Department, University of Maryland, College Park, MD — Liquid crystals are small monodisperse molecules with high mobilities and are easy and cheap to process. In addition, some of their phases exhibit molecular orientation that can provide a path for the electrons, or holes, to move from one electrode to the other. We have added a smectic A liquid crystal (8CB) to ZnO nanowire arrays of different diameters and have observed a photovoltaic effect as a function of the concentration of ZnO in the liquid crystal. The nanowire arrays are covered with 8CB liquid crystal for hole conduction. We have observed an increase in the light absorption of the PV cells as a function of wavelength of the light for the ZnO nanowire cells. We present a detailed study of the structure of the system.

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