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Study of Electrophoretic Deposition of ZnO Nanoparticles onto Silicon Substrates¹ FAWWAZ HAZZAZI, THEDA DANIELS-RACE, Louisiana State University — The electrophoretic deposition of zinc oxide (ZnO) nanoscale thin films is important to a number of research areas including biosensors, photophilic dye-sensitized solar cells, optoelectronic devices, and thin film transistors. In this talk, we will discuss our use of size-controlled charged zinc oxide nanoparticle-based thin films, synthesized and grown at room temperature on various silicon substrates via electrophoretic deposition (EPD). Our experimentation plan includes the current-voltage characterization of ZnO/p-Si heterojunctions. We will discuss our results in reference to our hypothesis that the concentration of ZnO nanoparticles in the electrolytic solution is a primary factor in the attainment of the enhanced flatness of ZnO thin films necessary for device development. This work represents a potential opportunity for the integration of this method of deposition into applications where ZnO contributes to the reliability, affordability, and highly increased sensitivity needed for the next-generation of nanoscale devices and systems.

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