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Selective Adsorption and Alignment Phenomena of ZnO Nanorods on Molecule-Patterned Substrates for Large-Scale Integrated Device Fabrication¹ JUWAN KANG, SUNG MYUNG, SEUNGHUN HONG,

School of Physics Seoul National University, DONGJIN OH, GYUTAE KIM, Korea University — ZnO nanorods have been utilized for various device applications such as field effect transistor, UV sensor, etc. However, a major stumbling block holding back their practical applications is a lack of mass-production method of such devices. Since ZnO nanorods are first synthesized in solution, one has to pick up and assemble individual nanorods onto substrate for device fabrication, which is not an easy task. We studied the selective assembly and alignment phenomena of ZnO nanorods on molecule-patterned solid substrates. When the molecule-patterned substrate is placed in the solution of ZnO, ZnO nanorods are selectively adsorbed onto negatively charged surface region. Furthermore, we found the adsorbed nanorods slide on the substrate resulting in aligned nanorod structures. This presentation will discuss the systematic study of ZnO nanorod assembly process on patterned substrates and applications of this method for large-scale assembly of ZnO nanorod-based integrated devices.

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