

Improvement of the interfacial properties between ZnO nanorods and conducting polymers through surface modification of ZnO nanorods with Poly(methyl methacrylate)

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We prepared vertically aligned, single crystalline ZnO nanorods via a low-temperature hydrothermal route on glass substrates pre-deposited with a ZnO seed layer. The ZnO nanorods were grown in a high packing density with a diameter of about 50nm and a length of a few hundreds nm. The ZnO seed layer deposited on a glass substrate by a spin coating showed controllability over the alignment of the ZnO nanorods and epitaxial effect on the growth. Then we modified the surface of ZnO nanorods with poly (methyl methacrylate) (PMMA) with UV treatment. It is anticipated that the polymer chains attached to the ZnO nanorods improve the interfacial properties between ZnO nanorods and conducting polymers such as polythiophenes upon mixing, suggesting applications to organic-inorganic hybrid photovoltaic devices.

Acknowledgments: This work was funded by the Fundamental R&D Program for Core Technology of Materials funded by the Ministry of Knowledge Economy (K00060054-55505), and the Korea Research Foundation (2012-047716).