NW-P011

Fabrication of Large-Scale Single-Crystal Organic Nanowire Arrays for High-Integrated Flexible Electronics

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Large-scale single-crystal organic nanowire arrays were generated using a direct printing method (liquid-bridge-mediated nanotransfer molding) that enables the simultaneous synthesis, alignment and patterning of nanowires from molecular ink solutions. Using this method, single-crystal organic nanowires can easily be synthesized by self-assembly and crystallization of organic molecules within the nanoscale channels of molds, and these nanowires can then be directly transferred to specific positions on substrates to generate nanowire arrays by a direct printing process. Repeated application of the direct printing process can be used to produce organic nanowire-integrated electronics with two- or three-dimensional complex structures on large-area flexible substrates. This efficient manufacturing method is used to fabricate all-organic nanowire field-effect transistors that are integrated into device arrays and inverters on flexible plastic substrates.

Keywords: single-crystal organic nanowires, direct printing, flexible electronics

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Cellular Adhesion and Growth on the Vertically Aligned Silicon Nanowire Arrays

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According to advanced nanotechnology, the nanostructured materials with various kinds and shape are synthesized easily or produced by process. Recently, researches about interaction between the nanostructured materials and biological system have been progressed actively. The surface topography may influence cellular responses, for example cell adhesion, cell morphology. In this work, we synthesized vertically aligned silicon nanowires (SiNWs) on the Au-covered Si(111) wafer by chemical vapor deposition (CVD) method. We accomplished to control of the SiNWs diameter by regulating thickness of Au film such as 1 nm and 10 nm. These substrates did not isolate cells and just provided surface topography for cell culture. Human Embryonic Kidney 293T cells (HEK 293T cells) were cultured on these substrates for 2 days. We studied the nanotopographical effects on cell morphology, adhesion, and growth which are evaluated on each SiNWs substrate comparing bare glass as control.

Keywords: nanotopography, cell adhesion