

Abstract Submitted
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‘Focused Assembly’ of V_2O_5 Nanowires for Fabrication of Metallic Nanowire Sensors TAE HYUN KIM, SUNG MYUNG, KWANG HEO, SEUNGHUN HONG, Department of Physics and Astronomy, Seoul National University, HND TEAM — We present a method named ‘focused assembly’ for high-precision assembly of pristine V_2O_5 nanowires (NWs) on solid substrates. In this method, ‘microscale’ self-assembled monolayer patterns with ‘gradient’ surface molecular density ‘focused’ the assembly of V_2O_5 NWs onto the ‘nanoscale’ regions on a metallic thin film just like a lens focuses the light. The assembled NWs could be utilized as a shadow mask during the ion-milling process to generate metallic NW-based devices. As a proof of concepts, we successfully demonstrated the fabrication of metallic NW-based sensors to detect thiol molecules or hydrogen gas under ambient conditions. This focused assembly phenomenon gives us new insights about the directed assembly process of nanostructures. Furthermore, this approach provides us an easy, but efficient, means to mass-produce NW-based devices for various practical applications such as field effect transistors, chemical sensors and nanoscale interconnectors.

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