

A new hybrid three-dimensional surface nano-patterning technology for nano-device applications

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Techniques for manufacturing large-area surface patterns with well-defined nanostructures, as required for advanced device applications with excellent performance, are lacking today. To overcome this bottleneck a new three-dimensional (3-D) surface nano-patterning technique will be established. The realization of this hybrid methodology will enable large-scale 3-D surface patterns with multifunctional and well-defined nano-structures. More importantly, it will give access to the most important advantage of nano-structured materials, i.e. the extremely large specific surface area, which is missing in two-dimensional surface nano-patterning. As a first application of this innovative fabrication strategy, 3-D tungsten oxide tubular surface nanostructures will be used for constructing a new high-sensitivity gas sensor device with multi-selective gas sensing capability.

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