

Scalable Fabrication of Ordered 1D Nanorods for Diverse Applications such as Next Generation Batteries

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Technology Summary

ID-1939 discloses an article having a biaxially textured substrate surface and a plurality of vertically-aligned, epitaxial nanopillars supported on the surface substrate. The article can include a matrix phase deposited on the biaxially textured surface and between the plurality of vertically-aligned, epitaxial nanopillars. The nanopillars can include a coating. The matrix phase and the vertically-aligned, epitaxial nanopillars can form an electronically active layer selected from the group consisting of a superconducting material, a ferroelectric material, a multiferroic material, a magnetic material, a photovoltaic material, an electrical storage material, and a semiconductor material. The present invention is a modification thereof wherein arrays of ordered, regularly placed, 1D nanorods of metals/alloys are formed by a scalable method. The 1D nanorods are single-crystal-like when formed on a biaxially-textured substrate. The invention is applicable to making materials such as Cu for battery electrodes or for solar cell collectors.

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