



Three-Dimensional Nanoarchitectures: Designing Next-Generation Devices

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Devices built from three-dimensional nanoarchitectures offer a number of advantages over those based on thin-film technology, such as larger surface area to enhance the sensitivity of sensors, to collect more sunlight to improve the efficiency of solar cells, and to supply higher density emitters for increased resolution in flat panel displays. Three-dimensional nanoscale assembly has already been used to generate many prototypes of devices and sensors, including piezoelectric nanogenerators based on ZnO nanowire arrays, photovoltaic devices based on silicon nanowire array *p-n* junctions, and highly sensitive gas sensors based on metal oxide nanowire arrays among others. *Three-Dimensional Nanoarchitectures: Designing Next-Generation Devices* describes state-of-the-art synthesis, integration, and design strategies used to create three-dimensional nanoarchitectures for functional nanodevice applications. With a focus on synthesis and fabrication methods for three-dimensional nanostructure assembly and construction, coverage includes resonators, nanophotonics, sensors, supercapacitors, solar cells, and more. This book is an essential reference for a broad audience of researchers in materials science, chemistry, physics, and electrical engineering who want the latest information on synthesis routes and assembly methods. Schematics of device integration and mechanisms as well as plots of measurement data are included.

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Three-Dimensional Nanoarchitectures: Designing Next-Generation Devices From Brand: Springer New York Bibliography

- Sales Rank: #4458021 in Books
- Brand: Brand: Springer New York
- Published on: 2011-08-04
- Original language: English
- Number of items: 1
- Dimensions: 9.46" h x 1.05" w x 6.39" l, 2.30 pounds
- Binding: Hardcover
- 538 pages

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