

# The Global Market for Nanoelectronics (Nanotechnology in Electronics)

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## Abstracts

The electronics industry will witness significant change and growth in the next decade driven by:

Scaling

Growth of mobile wireless devices

Huge growth in the Internet of Things (IoT)

Data, logic and applications moving to the Cloud

Ubiquitous electronics.

To meet these market demands, power and functionality needs to improve hugely, while being cost effective, driving demand for nanomaterials that will allow for novel architectures, new types of energy harvesting and sensor integration. As well as allowing for greater power, improved performance and bandwith, decreased size and cost, improved flexibility and better thermal management, the exploitation of nanomaterials allows for new device designs, new package architectures, new network architectures and new manufacturing processes. This will lead to greater device integration and density, and reduced time to market.

Semiconducting inorganic nanowires (NWs), carbon nanotubes, nanofibers, nanofibers, quantum dots, graphene and other 2D materials have been extensively explored in recent years as potential building blocks for nanoscale electronics, optoelectronics and



photonics components, coatings and devices.

The report covers nanotechnology and nanomaterials related to the following markets and applications:

Flexible, Stretchable and Printable Electronics

Conductive Films and Inks

Wearable health monitoring

**Electronic textiles** 

HMI automotive displays

Displays

Transistors

**Integrated Circuits** 

Other components

**Memory Devices** 

Conductive and waterproof electronics coatings

Photonics



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Figure 132: Revenues for nanocoatings in electronics, 2010-2027, US\$, conservative and optimistic estimates.

Figure 133: Hybrid graphene phototransistors

Figure 134: Wearable health monitor incorporating graphene photodetectors

Figure 135: Flexible PEN coated with graphene and a QD thin film (20nm) is highly visibly transparent and photosensitive.

Figure 136: Schematic of QD laser device



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