

Nanoscience: From Semiconductor Quantum Dots and Wires to Biosensors

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Nanoscience is based on highly interdisciplinary research and brings together scientists from physics, biophysics, chemistry, biochemistry, engineering and medicine. It is based on the control of condensed matter and biological systems on an atomic or molecular level, leading to new functionalities and applications in various fields. Our nano related research is embedded in the center of excellence "Nanosystems Initiative Munich" which concentrates on nanosystems for information technology and biomedical engineering. This includes the realization of novel semiconductor nanostructure devices based on so-called quantum dots and nanowires which allow the control of single charges, spins, and photons. These studies are basis for future information- and quantum information technologies. Another major research area is the development of novel biochemical sensors. After an introduction, I will present and discuss selected examples of both research areas.

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