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**Nanoparticles: from theory to application:  
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This book deals with nanoparticles, from fundamental principles to their use in novel applications. The special properties of quantum dots are outlined in the first chapter of the book. There is a wealth of interesting phenomena that have been measured in quantum-dot structures over the past decade. Quantum dots are fabricated with semiconductor materials and have typical dimensions between nanometers and a few microns. The size and shape of quantum dots can be precisely controlled. The understanding of properties of semiconductor and metal nanoparticles, which are described in the following chapters, is based on the understanding of quantum-confined electrons in small particles. In this book, chemists can find complete synthetic strategies of III-V semiconductor and noble nanoparticles as well as Ib-VI nanoclusters. The organization of nanoparticles by crystallization or self-assembly and techniques controlling structure

formation, e.g., the Langmuir-Blodgett and layer-by-layer techniques, are discussed in a further chapters. Optical and electronic properties of semiconductor nanoparticles, and optical and thermal properties of Ib-VI Nanoparticles are described in detail. Electrical properties of metal nanoparticles find wide applications in modern microelectronics, which continuously tends towards a higher degree of integration. The book also deals with biomaterial-nanoparticle hybrid systems, which are a tempting research project that provides a route into nanobiotechnology, e.g., the assembly of nanoparticle-protein conjugates by electrostatic interactions. Those hybrid systems find application as sensing devices, as building blocks for electronic circuitry, and as electronic and optoelectronic elements. Just like its predecessor, "Cluster and Colloids", this book will need a successor because of the extremely rapid development of nanoscience.

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