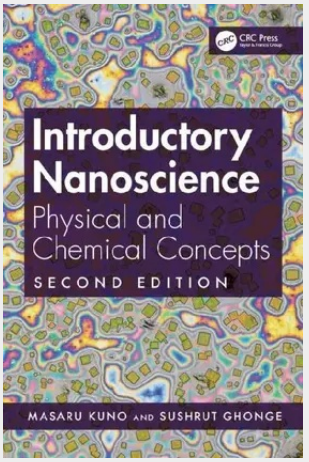
Kuno / Ghonge

Introductory Nanoscience

Physical and Chemical Concepts



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This comprehensive new edition provides a pedagogical introduction to what makes nanoscience unique, featuring quantitative descriptions of key concepts and solved examples throughout. The textbook demonstrates how understanding scale-dependent property changes allows us to predict the behavior and functionality of nanomaterials. Introductory Nanoscience, Physical and Chemical Concepts, Second Edition provides a pedagogical introduction to what makes nanoscience unique. It features beginner-friendly descriptions of key concepts and provides solved examples throughout. The text takes a quantitative approach to the subject and provides physical insights into how the optical and electrical properties of nanomaterials emerge from the laws of physics, and depend on their size, shape, and morphology. It simultaneously provides a chemical perspective for how nanometer-sized objects are made. Fundamental concepts are reinforced through end-of-chapter problems and further readings. The Second Edition updates information in the text and contains new chapters on electricity and magnetism as well as plasmonics. Designed for upper-level undergraduate and graduate students, users will appreciate complete derivations of relevant equations, simplified assumptions for practical calculations, listed references, and a historical overview about the development of colloidal quantum dots. A detailed solutions manual is available for adopting professors.

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