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Sinopsis

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The field of nanoscience was pioneered in the 1980s with the groundbreaking research on clusters, which later led to the discovery of fullerenes. Handbook of Nanophysics: Clusters and Fullerenes focuses on the fundamental physics of these nanoscale materials and structures. Each peer-reviewed chapter contains a broad-based introduction and enhances understanding of the state-of-the-art scientific content through fundamental equations and illustrations, some in color.

This volume covers free clusters, including hydrogen, bimetallic, silicon, metal, and atomic clusters, as well as the cluster interactions. The expert contributors examine how carbon fullerenes are produced and how to characterize their stability. They discuss the structure, properties, and behavior of carbon fullerenes, including the smallest possible fullerene: C20. The book also looks at inorganic fullerenes, such as boron fullerenes, silicon fullerenes, nanocones, and onion-like inorganic fullerenes.

Nanophysics brings together multiple disciplines to determine the structural, electronic, optical, and thermal behavior of nanomaterials; electrical and thermal conductivity; the forces between nanoscale objects; and the transition between classical and quantum behavior. Facilitating communication across many disciplines, this landmark publication encourages scientists with disparate interests to collaborate on interdisciplinary projects and incorporate the theory and methodology of other areas into their work.