



Physics and Chemistry of Finite Systems: From Clusters to Crystals

Volume I

Edited by

P. Jena, S. N. Khanna and B. K. Rao

Volume I

NATO ASI Series

Series C: Mathematical and Physical Sciences - Vol. 374

1992, XLIII, 1436 p. 661 illus.

Printed book

Hardcover

79,99 € | £72.00 | \$99.00

^[1]85,59 € (D) | 87,99 € (A) | CHF

106,60

Softcover

79,99 € | £72.00 | \$99.00

^[1]85,59 € (D) | 87,99 € (A) | CHF

106,60

eBook

67,82 € | £56.99 | \$74.99

^[2]67,82 € (D) | 67,82 € (A) | CHF

85,00

Available from your library or
springer.com/shop

MyCopy ^[3]

Printed eBook for just

€ | \$ 24.99

springer.com/mycopy

Peru Jena, S.N. Khanna, B.K.N. Rao (Eds.)

Physics and Chemistry of Finite Systems: From Clusters to Crystals

Series: Nato Science Series C:

Recent innovations in experimental techniques such as molecular and cluster beam epitaxy, supersonic jet expansion, matrix isolation and chemical synthesis are increasingly enabling researchers to produce materials by design and with atomic dimension. These materials constrained by size, shape, and symmetry range from clusters containing as few as two atoms to nanoscale materials consisting of thousands of atoms. They possess unique structural, electronic, magnetic and optical properties that depend strongly on their size and geometry. The availability of these materials raises many fundamental questions as well as technological possibilities. From the academic viewpoint, the most pertinent question concerns the evolution of the atomic and electronic structure of the system as it grows from micro clusters to crystals. At what stage, for example, does the cluster look as if it is a fragment of the corresponding crystal. How do electrons forming bonds in micro-clusters transform to bands in solids? How do the size dependent properties change from discrete quantum conditions, as in clusters, to boundary constrained bulk conditions, as in nanoscale materials, to bulk conditions insensitive to boundaries? How do the criteria of classification have to be changed as one goes from one size domain to another? Potential for high technological applications also seem to be endless. Clusters of otherwise non-magnetic materials exhibit magnetic behavior when constrained by size, shape, and dimension. Nanoscale metal particles exhibit non-linear optical properties and increased mechanical strength. Similarly, materials made from nanoscale ceramic particles possess plastic behavior.

Order online at springer.com / or for the Americas call (toll free) 1-800-SPRINGER / or email us at: customerservice@springernature.com. / For outside the Americas call +49 (0) 6221-345-4301 / or email us at: customerservice@springernature.com.

The first € price and the £ and \$ price are net prices, subject to local VAT. Prices indicated with [1] include VAT for books; the €(D) includes 7% for Germany, the €(A) includes 10% for Austria. Prices indicated with [2] include VAT for electronic products; 19% for Germany, 20% for Austria. All prices exclusive of carriage charges. Prices and other details are subject to change without notice. All errors and omissions excepted. [3] No discount for MyCopy.

