

BOOK REVIEW

Diamond and Related Nanostructures

edited by

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This is Volume 6 of the book series CARBON MATERIALS: CHEMISTRY AND PHYSICS, edited by Franco Cataldo and Paolo Milani, aimed at covering “all carbon materials and carbon-rich molecules from elemental carbon dust in the interstellar medium, to the most specialized industrial applications of the elemental carbon and derivatives”.

As Diudea and Nagy indicate in their *Foreword*, a diamond crystal can be viewed as a molecule with macroscopic dimensions. Various other molecules with diamond-like atomic arrangements have been either experimentally obtained, or theoretically imagined, and/or computationally treated. The book provides a survey of the latest developments and discoveries in this field

The book consists of 19 chapter, followed by an *Index*.

Chapter 1, *Diamond Hydrocarbons and Related Structures*, written by Alexandru Balaban, views the diamond through the eye of a chemist and connects it with adamantane and diamantane hydrocarbons.

Chapter 2, *Diamond and Diamond-like Carbon*, describes the synthesis by chemical vapor deposition of diamond and diamond-like carbon films.

The next seventeen chapters are the following; their content can be guessed from their titles.

3. *Experimental Access to Centropolycentric Carbon Compounds*,
4. *Two C₂₈ Clathrates*,
5. *Diamond D₅*,
6. *Energetics of Multi-shell Cages*,
7. *On Molecular Dynamics of the Diamond D₅ Substructures*,
8. *P-Type and Related Networks: Design, Energetics, and Topology*,
9. *Omega Polynomial in Hyperdiamonds*,
10. *Cluj and Other Polynomials of Diamond D₆ and Related Networks*,
11. *Hypergraphene from Armchair Nanotube*,
12. *Energetics and Topology of Polybenzenes*,
13. *Fullerene-like Spheres with Faces of Negative Curvature*,
14. *Molecules with Nonstandard Symmetry*,
15. *Carbon Networks in the Solid State*,
16. *Drawing Diamond Structures with Eigenvectors*,
17. *On the Structure of Quasicrystals in Higher-dimensional Space*,
18. *Mathematics of D₅ Networks*, and
19. *Quasicrystals: Between Spongy and Full Space Filling*.

Each chapter has an exhaustive list of references. The book ends with a detailed *Subject Index*.

The contributions to this book are written by a total of 36 authors, Diudea is author of chapter 19 and coauthor of chapters 5, 6, 8, 9, 10, and 18. Nagy is coauthor of only two chapters (5 and 11).

In summary, the book *Diamond and Related Nanostructures* outlines or at least touches the various aspects of the chemistry and physics of diamond and diamond-like materials. Technological and other applications are not covered. Emphasis is on various theoretical and mathematical aspects, as it could have been expected from the present Editors. Anyway, colleagues interested in this area of mathematical chemistry will find the book interesting and useful.

Ending with a joke: If you cannot afford to purchase a diamond, then purchase this book.

Ivan Gutman