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Distance, Symmetry, and Topology in Carbon Nanomaterials

 Springer

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Preface

In 1872, Felix Klein published his pioneering paper on the importance of symmetry, which was later named “Erlanger Programm” for his professorship at the University of Erlangen, Germany. He wrote: “we can say that geometry studies those and only those properties of the figure F which are shared by F and all the figures which are equal to F ”. He continued that the most essential idea required in the study of symmetry is that of a group of space transformations. Topology is the mathematical study of shapes. *Distance, Symmetry and Topology in Carbon Nanomaterials* gathers the contributions of some leading experts in a new branch of science that is recently named “Mathematical Nanoscience”.

This volume continues and expands upon the previously published titles *The Mathematics and Topology of Fullerenes* (Carbon Materials: Chemistry and Physics series, Vol. 4, Springer 2011) and *Topological Modelling of Nanostructures and Extended Systems* (Carbon Materials: Chemistry and Physics series, Vol. 7, Springer 2013) by presenting the latest research on this topic. It introduces a new attractive field of research like the symmetry-based topological indices, multi-shell clusters, dodecahedron nano-assemblies and generalized fullerenes, which allow the reader to obtain a better understanding of the physico-chemical properties of nanomaterials.

Topology and symmetry of nanomaterials like fullerenes, generalized fullerenes, multi-shell clusters, graphene derivatives, carbon nanocones, coru lattices, diamonds, dendrimers, tetrahedral nanoclusters and cyclic carbon polyynes give some important information about the geometry of these new materials that can be used for correlating some of their physico-chemical or biological properties.

We would like to thank to all the authors for their work and support, also to Springer for giving us the opportunity to publish this edited book and finally to Springer people who allowed all our efforts to make this an interesting book.

Kashan, Iran
Cluj-Napoca, Romania

Ali Reza Ashrafi
Mircea V. Diudea

Contents

1	Molecular Dynamics Simulation of Carbon Nanostructures: The Nanotubes	1
	István László and Ibolya Zsoldos	
2	Omega Polynomial in Nanostructures	13
	Mircea V. Diudea and Beata Szeffler	
3	An Algebraic Modification of Wiener and Hyper–Wiener Indices and Their Calculations for Fullerenes	33
	Fatemeh Koorepazan-Moftakhar, Ali Reza Ashrafi, Ottorino Ori, and Mihai V. Putz	
4	Distance Under Symmetry: (3,6)-Fullerenes	51
	Ali Reza Ashrafi, Fatemeh Koorepazan – Moftakhar, and Mircea V. Diudea	
5	Topological Symmetry of Multi-shell Clusters	61
	Mircea V. Diudea, Atena Parvan-Moldovan, Fatemeh Koorepazan-Moftakhar, and Ali Reza Ashrafi	
6	Further Results on Two Families of Nanostructures	83
	Zahra Yarahmadi and Mircea V. Diudea	
7	Augmented Eccentric Connectivity Index of Grid Graphs	95
	Tomislav Došlić and Mojgan Mogharrab	
8	Cluj Polynomial in Nanostructures	103
	Mircea V. Diudea and Mahboubeh Saheli	
9	Graphene Derivatives: Carbon Nanocones and CorSu Lattice: A Topological Approach	133
	Farzaneh Gholaminezhad and Mircea V. Diudea	

10	Hosoya Index of Splices, Bridges, and Necklaces	147
	Tomislav Došlić and Reza Sharafdini	
11	The Spectral Moments of a Fullerene Graph and Their Applications	157
	G.H. Fath-Tabar, F. Taghvaei, M. Javarsineh, and A. Graovac	
12	Geometrical and Topological Dimensions of the Diamond	167
	G.V. Zhizhin, Z. Khalaj, and M.V. Diudea	
13	Mathematical Aspects of Omega Polynomial	189
	Modjtaba Ghorbani and Mircea V. Diudea	
14	Edge-Wiener Indices of Composite Graphs	217
	Mahdieh Azari and Ali Iranmanesh	
15	Study of the Bipartite Edge Frustration of Graphs	249
	Zahra Yarahmadi	
16	The Hosoya Index and the Merrifield–Simmons Index of Some Nanostructures	269
	Asma Hamzeh, Ali Iranmanesh, Samaneh Hossein–Zadeh, and Mohammad Ali Hosseinzadeh	
17	Topological Indices of 3-Generalized Fullerenes	281
	Z. Mehranian and A.R. Ashrafi	
18	Study of the Matching Interdiction Problem in Some Molecular Graphs of Dendrimers	303
	G.H. Shirdel and N. Kahkeshani	
19	Nullity of Graphs	317
	Modjtaba Ghorbani and Mahin Songhori	
20	Bondonic Chemistry: Spontaneous Symmetry Breaking of the Topo-reactivity on Graphene	345
	Mihai V. Putz, Ottorino Ori, Mircea V. Diudea, Beata Szeffler, and Raluca Pop	
21	Counting Distance and Szeged (on Distance) Polynomials in Dodecahedron Nano-assemblies	391
	Sorana D. Bolboacă and Lorentz Jäntschi	
22	Tetrahedral Nanoclusters	409
	Csaba L. Nagy, Katalin Nagy, and Mircea V. Diudea	
23	Cyclic Carbon Polyynes	423
	Lorentz Jäntschi, Sorana D. Bolboacă, and Dusanka Janezic	

24 Tiling Fullerene Surfaces 437
Ali Asghar Rezaei

25 Enhancing Gauge Symmetries Via the Symplectic Embedding Approach 447
Salman Abarghouei Nejad and Majid Monemizadeh

26 A Lower Bound for Graph Energy of Fullerenes 463
Morteza Faghani, Gyula Y. Katona, Ali Reza Ashrafi,
and Fatemeh Koorepazan-Moftakhar

Index 473

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