

Contents

Part I Fundamental Aspects of Inorganic Nanosheets

1	Materials Chemistry of Inorganic Nanosheets—Overview and History	3
	Teruyuki Nakato, Jun Kawamata and Shinsuke Takagi	
2	Clay Minerals as Natural Nanosheets	33
	Robert A. Schoonheydt and Yasushi Umemura	
3	Synthetic Nanosheets from Ion-Exchangeable Layered Solids	55
	Teruyuki Nakato	
4	Graphene: Synthesis and Functionalization	101
	Tomo-o Terasawa and Koichiro Saiki	
5	Chalcogenide Nanosheets: Optical Signatures of Many-Body Effects and Electronic Band Structure	133
	Ivan Verzhbitskiy and Goki Eda	
6	Inorganic–Organic Interactions	163
	Tomohiko Okada and Makoto Ogawa	
7	Hybridization with Polymers	187
	Yoshiaki Fukushima and Kenji Tamura	
8	Colloidal Nanosheets	201
	Nobuyoshi Miyamoto, Yutaka Ohseido and Teruyuki Nakato	

Part II Functions and Applications of the Inorganic Nanosheets

9	Adsorbents Derived from Layered Solids	263
	Tomohiko Okada and Makoto Ogawa	
10	Sensors	303
	Takuya Fujimura and Ryo Sasai	

11	Energy Storage Systems	315
	Wataru Sugimoto and Dai Mochizuki	
12	Graphene Oxide Based Electrochemical System for Energy Generation	331
	Kazuto Hatakeyama, Shinya Hayami and Yasumichi Matsumoto	
13	Nanosheet-Based Electronics	347
	Minoru Osada	
14	Photoenergy Conversion	357
	Yohei Ishida and Shinsuke Takagi	
15	Photofunctional Nanosheet-Based Hybrids	373
	Jayavant L. Gunjekar, In Young Kim and Seong-Ju Hwang	
16	Efficient Photocatalytic Systems Integrated with Layered Materials Promoters	395
	Yusuke Ide	
17	Semiconductor Nanosheets	409
	Shintaro Ida	
18	Hybrids with Functional Dyes	419
	Juraj Bujdák	
19	Optical Materials	467
	Yasutaka Suzuki and Jun Kawamata	
20	Chirality and Its Application	483
	Hisako Sato and Akihiko Yamagishi	
21	Applications of Nanoclay-Containing Polymer Nanocomposites	501
	Jayita Bandyopadhyay and Suprakas Sinha Ray	
22	Biological Materials	523
	Challa Vijaya Kumar	

Inorganic Nanosheets and Nanosheet-Based Materials
Fundamentals and Applications of Two-Dimensional
Systems

Nakato, T.; Kawamata, J.; Takagi, S. (Eds.)

2017, VIII, 542 p. 291 illus., 168 illus. in color.,

Hardcover

ISBN: 978-4-431-56494-2