

Cambridge University Press

978-1-107-40666-7 - Fundamentals of Low-Dimensional Carbon Nanomaterials:

Materials Research Society Symposium Proceedings: Volume 1284

Editors John J. Boeckl, Mark Rummeli, Weijie Lu and Jamie Warner

Table of Contents

[More information](#)

## CONTENTS

Preface ..... xi

Materials Research Society Symposium Proceedings..... xiii

### *GROWTH OF GRAPHENE/SUBSTRATE STRUCTURES*

- \* **Graphene Growth on SiC and Other Substrates Using Carbon Sources...**3  
 W.C. Mitchel, J.H. Park, Howard E. Smith,  
 L. Grazulis, S. Mou, D. Tomich, K. Eyink,  
 and Said Elhamri

**CVD Growth of Graphene on Three Types of Epitaxial  
 Metal Films on Sapphire Substrate** ..... 11  
 Katsuya Nozawa, Nozomu Matsukawa,  
 Kenji Toyoda, and Shigeo Yoshii

### *LOW-DIMENSIONAL GRAPHITIZATION AND STRUCTURAL TRANSFORMATIONS*

**Low Temperature CVD Growth of Graphene Nano-Flakes  
 Directly on High K Dielectrics** ..... 19  
 Mark H. Rummeli, Alicja Bachmatiuk,  
 Arezoo Dianat, Andrew Scott, Felix Börrnert,  
 Imad Ibrahim, Shasha Zhang, Ewa Borowiak-Palen,  
 Gianarelio Cuniberti, and Bernd Büchner

**On the Carbo-Thermal Reduction of Silica for Carbon  
 Nano-Fibre Formation via CVD** ..... 25  
 Alicja Bachmatiuk, Felix Börrnert,  
 Imad Ibrahim, Bernd Büchner,  
 and Mark H. Rummeli

**A Fully Atomistic Reactive Molecular Dynamics Study  
 on the Formation of Graphane from Graphene  
 Hydrogenated Membranes** ..... 31  
 Pedro A.S. Autreto, Marcelo Z. Flores,  
 Sergio B. Legoas, Ricardo P.B. Santos,  
 and Douglas S. Galvao

\*Invited Paper

Cambridge University Press

978-1-107-40666-7 - Fundamentals of Low-Dimensional Carbon Nanomaterials:

Materials Research Society Symposium Proceedings: Volume 1284

Editors John J. Boeckl, Mark Rummeli, Weijie Lu and Jamie Warner

Table of Contents

[More information](#)

***POSTER SESSION: MECHANISM, GROWTH, AND PROCESSES  
OF LOW-DIMENSIONAL CARBON NANOSTRUCTURES***

**Metal-Catalyzed Graphitization in Ni-C Alloys  
and Amorphous-C/Ni Bilayers . . . . . 39**

Katherine L. Saenger, Christian Lavoie,  
Roy Carruthers, Ageeth A. Bol, Timothy J. McArdle,  
Jack O. Chu, James C. Tsang, and Alfred Grill

**Hole or Electron Doped C<sub>60</sub> Polymer Using Free  
Electron Laser Irradiation . . . . . 45**

Nobuyuki Iwata, Daiki Koide, Syouta Katou,  
Eri Ikeda, and Hiroshi Yamamoto

**Comparison of Epitaxial Graphene on Si-Face  
and C-Face 6H-SiC . . . . . 51**

Shin Mou, J.J. Boeckl, L. Grazulis, B. Claffin,  
Weijie Lu, J.H. Park, and W.C. Mitchel

***CNTs GROWTH, EXPLORING NOVEL CNT GROWTH TECHNIQUES  
AND GROWTH MECHANISMS I***

**Growth of Diameter-Modulated Single-Walled Carbon  
Nanotubes through Instant Temperature Modulation  
in Laser-Assisted Chemical Vapor Deposition . . . . . 61**

M. Mahjouri-Samani, Y.S. Zhou, W. Xiong,  
Y. Gao, M. Mitchell, and Y.F. Lu

**A CMOS Compatible Carbon Nanotube Growth Approach . . . . . 69**

Daire Cott, Masahito Sugiura,  
Nicolo Chiodarelli, Kai Arstila,  
Philippe M. Vereecken, Bart Vereecke,  
Sven Van Elshocht, and Stefan De Gendt

***CNTs GROWTH, EXPLORING NOVEL CNT GROWTH TECHNIQUES  
AND GROWTH MECHANISMS II***

**On the Formation of Carbon Nanotube Serpentes:  
Insights from Multi-Million Atom Molecular  
Dynamics Simulation . . . . . 79**

Leonardo D. Machado, Sergio B. Legoas,  
Jaqueline S. Soares, Nitzan Shadmi, Ado Jorio,  
Ernesto Joselevich, and Douglas S. Galvao

Cambridge University Press

978-1-107-40666-7 - Fundamentals of Low-Dimensional Carbon Nanomaterials:

Materials Research Society Symposium Proceedings: Volume 1284

Editors John J. Boeckl, Mark Rümmeli, Weijie Lu and Jamie Warner

Table of Contents

[More information](#)*ELECTRONIC, OPTICAL, AND MAGNETIC PROPERTIES  
OF CARBON NANOMATERIALS I*

- Graphene for Magnetoresistive Junctions** . . . . . **.87**  
 J. Inoue, T. Hiraiwa, R. Sato, A. Yamamura,  
 S. Honda, and H. Itoh
- Room Temperature Superparamagnetism Observed  
 in Foam-like Carbon Nanomaterials** . . . . . **.93**  
 Shunji Bandow, Hirohito Asano,  
 Susumu Muraki, Takahiro Mizuno,  
 Makoto Jinno, and Sumio Iijima

*STRUCTURAL CHARACTERIZATION*

- In-situ* Observations of Restructuring Carbon Nanotubes  
 via Low-Voltage Aberration-Corrected Transmission  
 Electron Microscopy** . . . . . **.101**  
 Felix Börrnert, Alicja Bachmatiuk,  
 Sandeep Gorantla, Jamie H. Warner,  
 Bernd Büchner, and Mark H. Rümmeli

*OPTICAL PROBES*

- A Fully Automated Remote Controllable Microwave-Based  
 Synthesis Setup for Colloidal Nanoparticles with Integrated  
 Absorption and Photoluminescence Online Analytics** . . . . . **.109**  
 Simon Einwächter and Michael Krüger

*ELECTRONIC, OPTICAL, AND MAGNETIC PROPERTIES  
OF CARBON NANOMATERIALS II*

- Band Gap Opening of Graphene after UV/Ozone  
 and Oxygen Plasma Treatments** . . . . . **.117**  
 Adrianus I. Aria, Adi W. Gani,  
 and Morteza Gharib

Cambridge University Press

978-1-107-40666-7 - Fundamentals of Low-Dimensional Carbon Nanomaterials:

Materials Research Society Symposium Proceedings: Volume 1284

Editors John J. Boeckl, Mark Rummeli, Weijie Lu and Jamie Warner

Table of Contents

[More information](#)

**POSTER SESSION: CHARACTERIZATIONS AND PROPERTIES  
OF LOW-DIMENSIONAL NANOCARBON STRUCTURES**

- Thermal, Chemical and Radiation Treatment Influence  
on Hydrogen Adsorption Capability in Single Wall  
Carbon Nanotubes** ..... .125  
Michail Obolensky, Andrew Kravchenko,  
Vladimir Beletsky, Yuri Petrusenko,  
Valeriy Borysenko, Sergey Lavrynenko,  
Andrew Basteev, and Leonid Bazyma
- Electrogenerated Chemiluminescence from Carbon Dots** ..... .131  
L. Sun, T.-H. Teng, Md. H. Rashid,  
M. Krysmann, P. Dallas, Y. Wang,  
B.-R. Hyun, A.C. Bartnik, G.G. Malliaras,  
F.W. Wise, and E.P. Giannelis
- Far Infrared Characterization of Single and Double  
Walled Carbon Nanotubes** ..... .137  
S.G. Chou, Z. Ahmed, G.G. Samsonidze,  
J. Kong, M.S. Dresselhaus, and D.F. Plusquellic
- Curvature-Induced Symmetry Lowering  
and Anomalous Dispersion of Phonons in Single-Walled  
Carbon Nanotubes** ..... .143  
Jason Reppert, Ramakrishna Podila,  
Nan Li, Codruta Z. Loebick,  
Steven J. Stuart, Lisa D. Pfefferle,  
and Apparao M. Rao
- Properties Modeling of Low-Dimensional Carbon  
Nanostructures** ..... .149  
Andrew Basteev, Leonid Bazyma,  
Mykhaylo Ugryumov, Yuriy Chernishov,  
and Margarita Slepicheva

**DOPING, DEFECTS AND SURFACE CHEMISTRY**

- Effect of Sidewall Fluorination on the Mechanical  
Properties of Catalytically Grown Multi-Wall  
Carbon Nanotubes** ..... .157  
Yogeeswaran Ganesan, Cheng Peng, Lijie Ci,  
Valery Khabashesku, Pulickel M. Ajayan,  
and Jun Lou

Cambridge University Press

978-1-107-40666-7 - Fundamentals of Low-Dimensional Carbon Nanomaterials:

Materials Research Society Symposium Proceedings: Volume 1284

Editors John J. Boeckl, Mark Rummeli, Weijie Lu and Jamie Warner

Table of Contents

[More information](#)

***NOVEL STRUCTURES AND PROPERTIES OF LOW DIMENSIONAL  
CARBON NANOSTRUCTURES***

**Nonlinear Mechanical Properties of Graphene Nanoribbons . . . . . 165**

Qiang Lu and Rui Huang

**Dynamics of Graphene Nanodrums . . . . . 173**

Gustavo Brunetto, Sergio B. Legoas,  
Vitor R. Coluci, Liacir S. Lucena,  
and Douglas S. Galvao

**A Novel Method for Sorting Single Wall Carbon**

**Nanotubes by Length . . . . . 179**

Shigekazu Ohmori, Takeshi Saito, Bikau Shukla,  
Motoo Yumura, and Sumio Iijima

**Author Index . . . . . 185**

**Subject Index . . . . . 187**