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Autore	Mandal Soumen
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Nota di contenuto	Introduction -- Insights into Nanodiamond from Machine Learning -- Tuning surface properties of detonation and milled nanodia-monds by gas phase modications -- Early Stages of Polycrystalline Diamond Film Deposition on Seeded Substrates -- Polycrystalline diamond: recent advances in CVD synthesis and applications -- Growth of diamond on high-power electronic material -- Bonding, thermal and ambient stability of nitrogen-terminated diamond (100) surfaces by plasma exposure studied by ex-situ XPS, HREELS, and DFT modeling -- Solid State Surface Transfer Doping of Diamond: Advanced Photoemission Characterisation -- Direct Bonding of Diamond and Dissimilar Materials for Fab-ricating High Performace Power Devices -- Ion-implantation of Ultrananocrystalline Diamond Films for Field Electron Emission Applications -- Advances in Water Treatment Using Boron Doped

Diamond Electrodes -- Electro-analysis using unmodied boron doped diamond elec-trodes -- Hydrogen-Terminated Diamond MOS Capacitors, MOSFETs, and MOSFET Logic Circuits -- Galfenol/Single-Crystal Diamond MEMS Magnetic Sensor -- Diamond-Graphene Nanohybrid (DGN) Films: Preparation, Characterization and Application -- Research Progress of Isotope Battery Devices Based on Ra-diation Voltaic Eect in Diamond.

Sommario/riassunto

This edited book covers a wide range of novel scientific and engineering aspects of diamond films produced from chemical vapor deposition. It focuses on the most recent developments and achievements in this rapidly growing field from scientists and engineers across the domains of chemistry, biology, medicine, physics, and semiconductor engineering. The latest volume of this consistently well-cited book brings an updated, systematic review of the latest developments in diamond research and application. Featuring contributed chapters from a mix of highly-active international researchers, this new edition presents recent research focusing on topics such as diamond for thermal management in high-power electronics, diamond MOSFETs, water treatment, application of machine learning for nanodiamonds, theoretical aspects of diamond growth, current trends in emerging diamond technologies, and the growth of doped single-crystal diamond. This book is especially appealing to interdisciplinary researchers and industry professionals working on advanced diamond devices and applications, as well as theoretical and computational methods for predicting and designing new diamond materials.