

# Preface

Nanodiamonds represent an emerging class of materials with important implications at the intersection of biology and medicine. Their consistent dimensions, unique surface properties, facile processing parameters and scalability, innate biocompatibility, and applicability as imaging/diagnostic and therapeutic platforms make them an ideal foundation for theranostic approaches. Their introduction to the field of nanomedicine couldn't come at a more important time. The optimized monitoring and treatment of physiological disorders such as cancer and inflammation, as well as the addressing of key domains such as regenerative medicine necessitates the development of technologies such as nanodiamonds which can be engineered to meet the aforementioned as well as a spectrum of additional medical needs.

A growing international community of researchers has convened towards the production of this book by sharing their multi-faceted strategies that have forged the role of nanodiamonds in impacting biology and medicine. As such, this book unites the expertise of pioneering efforts in the fundamental fabrication and characterization of nanodiamond particles and ultrananocrystalline diamond thin films, fluorescent nanodiamonds for biological labeling and cytotoxicity analysis, protein capture, and drug delivery particle and device design. Furthermore, the coalescence of nanodiamond platforms with technologies for cellular interrogation and nanomanufacturing are introduced to illustrate the impact of this versatile platform towards a broad spectrum of applications.

The reader will be introduced to a very diverse set of methodologies that span the disciplines of chemistry, physics, materials science, bioengineering, and beyond. These contributions are this intended to formulate a foundation for a roadmap that spans synthesis and characterization through translational application.

Nanodiamonds

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