

Preface

Nanoparticles have numerous biomedical applications such as in drug delivery, bone implants and imaging. It is now well understood that a material is always covered by proteins immediately upon contact with a physiological environment. This phenomenon is key to understanding the bio-nano interface. The reactivity of nanomaterials with biological fluids is predominantly affected by various interactions between the surface of nanoparticles and the medium used for their dispersion. These interactions evolve over time and have led to the emergence of the field of protein-nanoparticle complexes.

The formation of a nanoparticle-protein corona changes the behavior of the nanoparticle, resulting in new biological characteristics and influencing the circulation lifetime, accumulation, toxicity, cellular uptake and agglomeration. The formation of the nanoparticle-protein corona has fueled the issues related to their transport and fate in the environment, animals and humans.

This book, *Nanoparticle-Protein Corona: Biophysics to Biology*, covers various aspects of the biological significance of the nanoparticle-protein corona. This phenomenon opens new avenues to study the protein-protein interaction at a molecular level. This book delves into the effect of the nanoparticle-protein corona in cellular assays, methods to characterize these coronas, computational approaches to understand these interactions, and their applications and challenges. The book will provide great insights for biomedical and material scientists, toxicologists, pharmaceutical chemists, and interdisciplinary scientists.

This book is a culmination of the long-term scientific association and collaboration between the editors and authors.

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