

## **Preface**

Nanotechnology enabled sensors is an exciting field to enter into. It is our intention to provide the readers with a deep understanding of the concepts of nanotechnology enabled sensors, handing them the information necessary to develop such sensors, covering all aspects including fundamental theories, fabrication, functionalization, characterization and the real world applications, enabling them to pursue their research and development requirements.

This book can be utilized as a text for researchers as well as graduate students who are either entering these fields for the first time, or those already conducting research in these areas but are willing to extend their knowledge in the field of nanotechnology enabled sensors. This book is written in a manner that final year and graduate university students in the fields of chemistry, physics, electronics, biology, biotechnology, mechanics and bioengineering, can easily comprehend.

Nanotechnology enabled sensors is multidisciplinary by nature. It is important that the readers are armed with the necessary knowledge of physics, chemistry and biology related to these sensors and associated nanosciences. This book does not assume that its readers are experts in the multidisciplinary world; however, a basic understanding of university level chemistry and physics is helpful.

In this book, the authors present sensors that utilize nanotechnology enabled materials and phenomena. The terminology and concepts associated with sensors are presented which include some of the relevant physical and chemical phenomena applied in the sensor signal transduction system. The role of nanomaterials in such phenomena is also detailed. Throughout this book, numerous strategies for the fabrication and characterization of nanomaterials and nanostructures, which are employed in sensing applications, are provided and the current approaches for nanotechnology enabled sensing are described. Sensors based on organic and inorganic materials are presented and some detailed examples of nanotechnology enabled sensors are explained.