Preface

Nanotechnology is one of the continuously emerging scientific areas combining knowledge from the fields of Physics, Chemistry, Biology, Medicine, Informatics and Engineering. Nanostructured materials and nanosystems are fabricated and fully characterised by nanotechnological tools and techniques, at sizes below 100 nm. Although there are restrictions related to nanoscale size, it is the handling and processing of matter at this scale that leads to the development of new and novel materials which may have the same bulk composition but widely varying properties. The diverse applications of nanomaterials ranging from electronic and engineering systems and devices, to optical and magnetic components, nanodevices in medicine, cosmetic merchandise, agricultural and food products are believed to pave the way and have a significant economical and societal impact.

This book gives an overview of nanostructures and nanomaterials applied in the fields of energy and organic electronics (*Chap. 1*). It combines the knowledge of advanced deposition and processing methods of nanomaterials, and state-of-the-art characterization techniques with special emphasis on the optical, electrical, morphological, surface and mechanical properties (mainly in *Chaps. 5 and 6*). Furthermore, it contains theoretical and experimental aspects for different types of nanomaterials, such as nanoparticles, nanotubes and thin films for organic electronics applications. Specifically it includes topics on carbon nanomaterials and nanotubes focusing on their different synthesis routes *(as shown in Chaps. 2 and 3)*, and full characterisation of their properties at a theoretical and experimental level for optoelectronics applications *(as shown in Chaps. 7–9)*. The different deposition techniques used to fabricate nanostructured thin films and the processing methods such as self-assembly and nanopatterning of surfaces are extensively described in *Chaps. 4 and 10.*

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