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2nd World Congress and Expo on

GRAPHENE & 2D MATERIALS

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Graphene and graphene-based devices: A future for electronics

Low dimensional materials have numerous unique attributes, such as ballistic electron transport and high thermal conductivity as in carbon nanotubes and graphite. The interactions between these carbon-based materials and conducting polymers can lead to nanoscale heterojunctions, and open up the possibility of nanoscale electronic devices. The advantages of these type of electronic structures over traditional semiconductor devices are the possibility of large scale nanoelectronic device fabrication using self-assembly processes. The properties of a range of carbon nanotube and graphene nanomaterials and their properties relevant to electronic device applications will be presented, ranging from high quality single layer graphenes produced in a plasma process through vertically-aligned graphenes produced from natural precursors, also using plasma processes. These methods produce materials suited for both electronic conductors that can be transferred between substrates through to densely packed and aligned graphene materials exhibiting large specific capacitance and suitable as storage electrodes. This presentation will explore how this range of graphene materials, in conjunction with other carbon-based materials such as advanced electronic polymers will lead to a new generation of nanoelectronic devices.

Biography

John Bell completed his PhD from the University of New South Wales (Sydeny, Australia) and undertook Postdoctoral Studies at Cornell University and CSIRO before commencing his academic career at the University of Technology Sydney. He is currently the Head of the School of Chemistry, Physics and Mechanical Engineering at the Queensland University of Technology, in Brisbane, Australia. He has published more than 140 refereed papers in international journals, is an Editorial Board Member of Scientific Reports and is Chair of the Engineers Australia Working Group on Nanoengineering.

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