



Materials, devices and quantum research at the Australian National University (ANU)

Presented by:

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Abstract: The Research School of Physics and Engineering at ANU is large and multidisciplinary, home to around 180 researchers and over 200 graduate students, including major infrastructure in materials production, processing, device fabrication, quantum information, characterization and ion accelerators. Indeed, materials research and applications is an area of particular focus, with much supporting infrastructure that is unique world-wide. All areas of the School's research are decidedly collaborative with researchers and institutions world-wide. Particular areas highlighted in this presentation are: III-V semiconductors including nanowires and 2D structures, hyperdoping of group IV semiconductors for novel optical devices, metamaterials, quantum information and information storage, novel high pressure materials and phases, some aspects of nanowire PV devices, nanoindentation and in-situ diagnostics, as well as surface chemistry studies that include wetting and liquid interactions with surfaces. In particular, the III-V group has grown a range of an impressive material structures and nanowires of high quality and has exploited these materials in a range of optical-based devices and applications. In the metamaterials area, the program combines theory and experimental demonstration particularly in the area of THz devices. Hyperdoping of both Si with transition elements and Ge with Sn using ion implantation and pulsed laser melting has also achieved some impressive results. Quantum information studies include rare earth elements in exotic crystals for demonstrating quantum coherence and optical approaches to quantum computing, as well as studying and exploiting the NV centre in diamond. Diamond anvil cells, nanoindentation and fsec lasers have been used to obtain a range of new high pressure phases in Si and Ge that are stable at room pressure and temperature. Our nanoindentation facilities include the ability to monitor both mechanical, electrical and structural properties in-situ and this opens up new opportunities for materials characterisation. Finally, some of the School's flagship characterisation and fabrication tools will be introduced, including a positron beam line, unique ion beam facilities and integrated growth and fabrication capabilities.

Friday, Oct. 28, 2016

Refreshments served - PIZZA!!!!

Seminar begins at 12:20 PM in Fitz Hall 580