



To Editors
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CUHK Acquires New High Energy Accelerator for Materials Research

The Materials Technology Research Centre of The Chinese University of Hong Kong (CUHK) has acquired a Tandem Accelerator for Ion Beam Analysis to boost its research strength in materials research.

Professor Ian Wilson, Director of the Materials Technology Research Centre, said, "The machine is the only one of this kind in Hong Kong and Southern China and will be used in a large number of collaborative projects. The Accelerator Laboratory will provide excellent teaching and research facilities for the Centre and the Department of Electronic Engineering, and other universities of Hong Kong."

As a centre of excellence in materials research, the Materials Technology Research Centre purchased the machine with fund from the Ho Sin Hang Education Endowment Fund, the CUHK special equipment grant, Department Funding and fund from the Inter-institutional Microelectronics Consortium (IMC). In 1994, IMC, formed by the Electrical and Electronic Engineering Departments of five universities, namely City University, The Chinese University of Hong Kong, University of Hong Kong, Hong Kong Polytechnic University, and Hong Kong University of Science and Technology was granted central allocation funding by the University Grants Committee. Part of the funding, a total of HK\$6 m were earmarked to purchase the machine.

Ion beam analysis used light ions, usually hydrogen and helium, for material analysis. The machine can perform a wide range of analytical techniques including Rutherford Backscattering Spectrometry (RBS), Particle Induced X-ray Emission (PIXE), ion channelling, nuclear reaction analysis, Elastic Recoil Detection (ERD), high energy ion implantation, and ion beam mixing for the modification of materials. The demand for such kind of techniques is very high among local higher institutions. Research workers from CUHK and other IMC members have already queueing for analysis services. An intriguing application of these techniques is in the analysis of art objects and antiques.

Professor Joseph S P Wong, Associate Professor of the Department of Electronic Engineering revealed that the Research Grants Committee had recently granted funding to a research project by a team consisting staff members from the Departments of Physics, Chemistry and Electronic Engineering and the Art Museum to study Chinese antiques using surface science techniques.

"In view of the large antique market in Hong Kong, there is a ready market for our techniques. Unlike other techniques, ion beam analysis can be used to study antiques and art objects without causing even slight damage to the objects," he said.

The machine can also be used to fabricate new materials and structure for microelectronic and optoelectronic devices by high energy ion implantation. CUHK plans to form deep junctions in silicon and compound semiconductors. The high penetration of dopant ions allows exotic profiles and new types of devices to form.

CUHK also aims to explore the formation of nanostructured materials by implanting a species into a immiscible matrix to form nanometer sized precipitates or colloids. The third aim is to use CUHK's expertise in optoelectronics and fabrication methods, such as the growth of compound semiconductor layers, to design and fabricate devices such as the laser diode, waveguides, and fibre lasers.