



College of Engineering

Department of  
Mechanical & Industrial Engineering

## The Sidney E. Fuchs Seminar Series

3:00-4:00pm, Friday, February 3<sup>rd</sup>, 2017

Frank H. Walk Design Presentation Room



### From Space Radiation Simulation to Healthier Prawn Sandwiches: Engineering Research Possibilities Using the Louisiana Accelerator

by **Harry J. Whitlow\***

**Professor of Physics and Director of the Louisiana Accelerator Center,  
University of Louisiana at Lafayette**

Particle accelerator businesses represent today an industry with a global added value of \$ 50 billion with \$ 2.2 billion industrial-use accelerator systems shipped per year. Many more accelerators are installed for medical and industrial yearly use than for their original use area of fundamental nuclear physics. MeV ion accelerators are powerful tools for modifying and characterising materials on a micrometre and nanometer scales. The first part of the talk introduces the how MeV ions interact with materials and how this is used as for materials characterisation and modification. With the goal of promoting new innovative research between LSU and the Louisiana Accelerator Center, the second part of the talk will illustrate how MeV ion beam methods are used for a wide variety of materials and studies over a broad range to technologies including space research, nanolaminate film characterisation and microfluidic devices for food and medical diagnostics applications as well as investigating historical technologies for conservation and restoration studies.

\* Dr. Harry J. Whitlow's academic studies started at The University of Bath with BSc honours degree in physics with physical electronics and he did his Doctor of Philosophy work at Sussex University on Low energy ion implantation of silicon under the supervision of Professor Sir Michael Thompson. Subsequently he moved to Aarhus in Denmark and Helsinki in Finland as a postdoc, before taking up a position as research engineer at the Royal Institute of Technology (KTH) in Stockholm. In 1990, he moved to Lund University. In 1999, the University of Bath awarded him a Doctor of Science degree and in 2000 he was promoted to professor of experimental nuclear physics: ion physics at Lund University. In August 2004 He moved to Finland to become professor of experimental materials physics in Jyväskylä. In April 2012 he took up a position as chargé de recherche at Haute Ecole Arc Ingénierie, University of Applied Sciences of Western Switzerland in La Chaux-de-Fonds, Switzerland. He also holds the position of Adjunct Professor in the Chemistry Department of Kasetsart University, Thailand. From August 2016 he is appointed as Professor of physics and Director of the Louisiana Accelerator Center in Lafayette LA. His publications span a wide range of topics including archaeological processes on flint tools, violin acoustics, Time of Flight ERDA, sputtering, fundamental nuclear physics, molecular dynamics and molecular orbital calculations, MeV ion beam lithography and fundamental stopping data for predicting soft-upsets in electronics for space applications. Totally, he has produced about 190 scientific publications of which about 150 are in international refereed scientific journals. He has also edited two major books on surface characterisation and the application of ion beams in nanoscience, written ten book chapters and serves on the Editorial Advisory Board of the Elsevier Journal Nuclear Instruments and Methods in Physics Research Section B since 2011.