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Canadian Nuclear Society / Société Nucléaire Canadienne

“Supporting nuclear science and technology for over 25 years”
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“Energy Harvesting Materials to Power Today’s Devices”

The field of Energy Harvesting, powering electronics from locally available energy, has encountered renewed interest as low power mobile devices and sensors are developed. Exploiting energy resources in the immediate environment means that the usefulness of a device is limited by its physical survival rather than by the energy storage capacity of its battery. In this talk, Rosaura will focus on energy harvesting from kinetic sources such as: vibrations, fluid flow, and incidental (or “passive”) human motion (as opposed to “active” where a human must do something specific to have that useful power; e.g. turning a radio crank). Energy from such environmental sources can be used to supplement or replace battery power in mobile devices with the use of Magnetic Actuator materials, which convert mechanical stimuli into a varying magnetic field which can then be converted into electric power. Specific examples applicable to the Canadian Forces will be discussed.

The speaker, Rosaura Ham-Su, graduated with a degree in Engineering Physics from the Universidad Iberoamericana. She then went to McMaster University, where she obtained her doctorate in Materials Science under the supervision of Prof. David Wilkinson (now Dean of the Faculty of Engineering at McMaster), on the Processing and Creep Properties of Alumina/Silicon Carbide Composites. During this time she also worked at the Technical University of Dresden, Germany, on the Modelling of Internal Strains in Heterogeneous Materials.

Rosaura then moved to Halifax, Nova Scotia, where she was a Research Scientist at Nova Crystals Ltd. While at Nova Crystals, she developed light protective composite armour for use against multiple armour-piercing rounds, and had two children. From there, Rosaura became a Defence Scientist and Group Leader of the Functional Materials Group at Defence Research and Development Canada – Atlantic. Her work there included consulting for our Navy and developing Magnetic Shape Memory Alloys and composites for missiles, sonars and energy harvesting devices. Recently, Rosaura also won an international team award for work on Friction Stir Processing of Nickel Aluminum Bronze, an alloy used in submarines. She has been with AECL since 2007 in the Fuel Materials Properties and Behaviour Section of the Fuel Development Branch



Rosauara Ham-Su

Atomic Energy of Canada Ltd

Talk : 6:30 pm, Thursday July 23, 2009

Bennett / Mackenzie Room, J.L. Gray Centre
(Entry via rear security entrance)

Further information: Ragnar Dworschak at 584-8811 Ext. 44342, or Geoff Edwards at Ext. 43247