



Deep River Science Academy
"Your gateway to a career in science and engineering"

Canadian Nuclear Society / Société Nucléaire Canadienne

"Supporting nuclear science and technology for over 25 years"
"plus de 25 ans de promotion de la science et de la technologie nucléaires"

"From the Discovery of the Neutron to the Spallation Neutron Source"

In the early part of the 20th century, the existence of the neutron was predicted by Rutherford, a notion that was later (1930) supported by the Russian physicists Ambartsumian and Ivanenko. In the early 30s, Bothe and Becker (1931) in Germany, and Irène Joliot-Curie and Frédéric Joliot (1932) in Paris carried-out experiments that produced neutrons, but were not identified as such. On the heels of those experiments, Chadwick, working in Rutherford's group at Cambridge, made the proposal that the penetrating radiation observed by Bothe and Becker, and Joliot-Curies could not be gamma radiation, but a new radiation that consisted of uncharged particles with a mass slightly larger than that of a proton. In a letter to Bohr dated February 24, 1932, Chadwick made the comment that "whatever the radiation from Be (beryllium) may be, it has most remarkable properties". The seminar will describe how these "remarkable properties" of neutrons are exploited to unravel a diverse range of scientific problems, and how the "machines" that produce them in the quantities necessary for experimentation work, culminating in a description of the \$1.4B Spallation Neutron Source in Oak Ridge.

Our speaker, Dr. John Katsaras, is a long-time Deep River resident. John did his undergraduate work at Concordia University in Quebec and obtained an MSc and Ph.D from Guelph in 1986 and 1991 respectively for work in Biophysics. John then spent a few years as a post-doctoral fellow of Biochemistry at Guelph, and of Physical Chemistry at the CRPP-CNRS in Pessac, France. He joined AECL in 1994 as a Associate Research Officer in the Neutron Program for Materials Research at the National Research Council of Canada, using the neutron beams from NRU for the determination of the structure of biologically relevant systems and becoming Principal Scientist there in 2009. In 2010 he accepted a position as a Senior Scientist at Oak Ridge National Laboratories in Tennessee, while continuing his involvement in research at Chalk River. John is currently working on: the development of spontaneously forming vesicles specifically targeted to delivering payloads to the brain, the detailed structure of biofilms, and atomic-resolution neutron and x-ray holographies.



John Katsaras
Principal Research Officer, NRC Canada
Senior Scientist Biological Systems, ORNL USA

Talk : 6:30 pm, Thursday July 28, 2011

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

Further information: 613-584-8811 Ruxandra Dranga (46856) or Geoff Edwards (43247), or Blair Bromley at 613 584 1518