



# Deep River Science Academy

## Summer Lecture Series

Co-sponsored by  
Canadian Nuclear Society  
Chalk River Branch



### Sudbury Neutrino Observatory - Observing the Sun from 2 km Underground

The Deep River Science Academy and the Chalk River Branch of the Canadian Nuclear Society are pleased to welcome Dr. Davis Earle, who will speak on the Sudbury Neutrino Observatory (SNO).

The SNO was built 2 km underground, in an operating nickel mine, primarily to observe neutrinos emitted from the core of the sun. Neutrinos, tiny bits of energy, are the most plentiful particle in the universe. Dr. Earle and his team were primarily interested in those created in the centre of the sun, but also looked at neutrinos created by cosmic rays. Natural radioactivity from cosmic rays and building materials were the chief concern during design and construction of the laboratory, but work exceeded even optimistic expectations and created the lowest radioactive location on earth. The data obtained have answered the 30-year uncertainty: "Why do other experiments see only a third of the expected solar neutrinos?"

*Science Magazine* recognized the team of experimentalists at the SNO as having provided the second most significant scientific breakthrough in all of science for 2002: a silver medal, and a great Canadian achievement. The scientific work at the SNO has also been recognized in 2003 by the awarding of the American Physical Society Tom W. Bonner Prize in Nuclear Physics and the Canadian Association of Physicists Medal for Achievement in Physics. Dr. Earle will describe the observatory, some of the challenges that were overcome to build it, and the results leading to the awards. He will also explain what neutrinos are and why scientists are so interested in them.

Dr. Earle is a former student of Memorial University and the University of British Columbia, and was named a Rhodes Scholar in 1960. He earned his doctorate in nuclear physics, and worked at Atomic Energy of Canada Limited as a nuclear physicist before his position at the SNO. He now lives in Deep River, Ontario.

**Dr. Davis Earle**

Thursday, 2005 July 21, starting at 6:30 p.m.

J.L. Gray Engineering Centre -- Bennett/Mackenzie Room,  
(Please come to the rear entrance of the building)

Refreshments will be served – ALL WELCOME!