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**The Deep River Science Academy**

## **“The Role of Radiation Chemistry in Maintaining Reactor Integrity”**

by

**Craig Stuart**

The core of a nuclear reactor is unique in subjecting large volumes of water and gas to an intense radiation field. The deposition of radiation energy in-core initiates significant chemistry changes which can result in undesirable chemistry conditions including the production of flammable hydrogen and corrosive conditions. Fortunately, the science of radiation chemistry relevant to reactor systems is well understood and careful manipulation of chemistry conditions prior to entering the radiation field can not only result in the avoidance of undesirable conditions, but can be used to take advantage of the radiation field in improving chemistry conditions.

This presentation will briefly cover the fundamental principles of radiation chemistry and its applications beyond reactor chemistry and will focus upon the importance of understanding the effects of radiation chemistry in maintaining the integrity of reactor systems. The role of radiation chemistry in the recent corrosion degradation observed in NRU will be described. Questions will be welcome.

The speaker is Dr. Craig Stuart, a Senior Scientist in the Reactor Chemistry and Corrosion Branch at AECL Chalk River. Dr. Stuart has been with AECL since 1995, performing radiation chemistry research and providing chemistry solutions for nuclear reactor systems.



**Craig Stuart**

Senior Radiation Chemist  
Reactor Chemistry and Corrosion  
AECL

Talk : 6:30 pm, Thursday July 22, 2010

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

*Further information: Blair Bromley at 584-1518, or Geoff Edwards at 584-8811/ext. 43247*