

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”

In partnership with the

The Deep River Science Academy

“Supercritical Water. What exactly *is* it?”

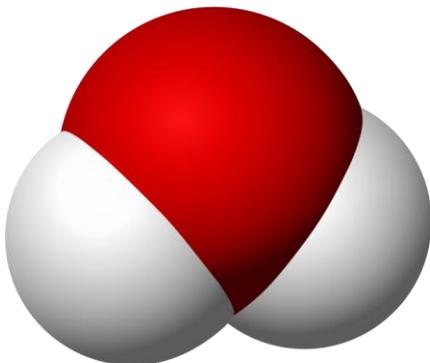
by

David Guzonas

The Generation IV Supercritical Water-Cooled Reactor (SCWR) will use water at temperatures and pressures above the thermodynamic critical point ($T_c = 647.1$ K, $p_c = 22.1$ MPa) as the coolant. In this context, a curious colleague recently asked the obvious question, which now forms the title of this talk. After the flippant response of “Water above its critical point”, and an entertaining but ultimately futile Google search, came the inspiration for this talk. If successful, the presentation will leave the audience with some insights into this intriguing fluid.

Water, the archetypal liquid to most people, is definitely *not* a typical liquid. The presentation will therefore start by discussing water under the conditions most familiar to land-dwelling creatures at the earth’s surface, before moving to more extreme conditions typical of the ocean floor, the interior of the earth, or the core of an SCWR. A central theme will be the structure of water, in particular, the significance of the hydrogen bonding that occurs between water molecules and which is responsible for so many of its unusual properties. During the talk, examples of the uses of supercritical water in fields such as geochemistry, hazardous waste destruction, and of course, power generation will be given.

Dr. David Guzonas is a Principal Chemist in the Reactor Chemistry and Corrosion Branch at Atomic Energy of Canada Limited. His work focuses on development of water chemistry specifications for CANDU reactor designs, development of strategies to minimize corrosion product and activity transport, and research on chemistry and materials for the Generation IV SCWR. He is currently Chair of the Canadian National Committee of the International Association for the Properties of Water and Steam, and Chair of the Generation IV International Forum SCWR Materials and Chemistry Project Management Board.



David Guzonas

Principal Chemist

Reactor Chemistry and Corrosion Branch

AECL

Talk: 6:30 pm, Thursday July 14, 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