

OCGC SEMINAR

Optically Stimulated Luminescence: past, present, and future

Dr. Godfrey-Smith

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Defence Research and Development, Ottawa, Canada

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University of Ottawa

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Université d'Ottawa

Advanced Research Complex

Pièce 233

Abstract:

Optically stimulated luminescence (OSL), the daughter technique of thermoluminescence (TL), was introduced to the world in 1985 by Dr. Godfrey-Smith and her colleagues Huntley and Thewalt. Since then, the method has grown to become the method of choice in both geochronology and mainstream radiation dosimetry. As such, it is one of the triad of techniques applied to the dosimetry of a very wide variety of solid-state materials, the third being electron spin resonance (ESR).

This presentation will review the basic principles of radiation dosimetry, highlight the key differences between OSL and TL, and provide examples of the breadth of applications to which OSL has been applied with success in geology, archaeology, and modern radiation dosimetry. Suggestions for potential future applications will be offered.

***Dr. Godfrey-Smith:** After completing pure and applied sciences diploma in CEGEP, followed by a year in the engineering department at McGill, Dr. Godfrey-Smith obtained a BA in Archaeology at the University of Calgary. She then combined her love of both science and prehistory by focusing on archaeometry, which resulted in her MA from Simon Fraser University on the x-ray fluorescence characterization of obsidian flows from the Mount Edziza Volcanic Complex of northern British Columbia. She then moved across campus to SFU's physics department, and focused her attention during the next few years on the invention of Optically Stimulated Luminescence and its primary application, the optical dating of Quaternary geology. These fruitful years yielded her a double Physics-Geology PhD (formally, "by Special Arrangements") in 1991. Dr. Godfrey-Smith was then invited to join the Dosimetry Laboratory of Dr. Edwin Haskell in the Radiobiology Department of the University of Utah. There, she participated in a joint US-UK-Estonian retrospective dosimetry project aimed at measuring the environmental doses resulting from the Chernobyl nuclear accident at the nearby workers' town of Pripyat. In 1992, Dr. Godfrey-Smith was awarded a Women's Faculty Fellowship, which led to her establishing a Luminescence Geochronology Laboratory at Dalhousie University in Halifax. During this time, she became known as the Mister Spock of field archaeometry among her colleagues on a number of joint geo- and archaeological projects in Canada and overseas. In 2004, Dr. Godfrey-Smith joined Defence R&D Ottawa, where she continues to this day. Her research focus shifted from geochronology to retrospective and forensic dosimetry. During this time, she also served on two deployments as an Operational Analyst with the Canadian Forces in Afghanistan.*

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