

### Technical Chapter Meeting

#### “Nano-Scale Electron Emitter Lifetime”

**Speaker:** **J. Scott Price**  
**High Energy Physics Lab**  
**GE Global Research**

**Date:** Thursday, May 1st

**Time:** 6 PM Social Hour  
7 PM Dinner  
Lecture to follow

**Place:** Crossgates Restaurant  
225 Washington Avenue Ext  
Albany, NY

**RSVP by noon Monday April 29, 2008**

**Contact:** **Lewis Stitt** (stittl@asme.org or  
lstitt\_02@earthlink.net or 266-3540)

#### Abstract:

The past ten years has seen a growth of nano-scale devices to replace high-temperature thermionic electron emitters. High current density at the emitter tip characterizes these devices. The current is produced by the application of a high electric field imposed by the presence of a charged material surface close to the emitting surfaces. Sufficient emitter area is seen as the answer to a number of applications. Emitter lifetime remains a limiting factor for some uses. The emitter structure must be robust to the bombardment of radiation, charged particles, and heating from the high currents dispensed during the expected lifetime. Not all degradation mechanisms are equally harsh. A discussion of different mechanisms will be presented and a comparison made to values presented in recent literature on field emitters.

#### Speaker:

J. Scott Price is a Physicist/X-ray Technologist in the High Energy Physics Lab having joined the Global

Research Center in January 2004 after five years as Lead Cathode Design for New Product Introduction programs at GE Healthcare-Technologies in Milwaukee, WI. Scott is leading a number of technical efforts related to x-ray source development for medical, Non Destructive Evaluation, and security applications.

Scott graduated with a BS magna cum laude from the University of Missouri-Rolla (now Missouri University of Science and Technology) in physics, has a physics degree from the Université Pierre et Marie Curie Paris VI, and a PhD in nuclear physics from the University of Wisconsin-Madison. After a post-doctoral appointment at University of Michigan-Ann Arbor, he became an accelerator staff scientist at the Jefferson National Accelerator Facility in Newport News, VA. There he contributed to the commissioning of a 5 GeV spin-polarized electron accelerator's injector by solving important problems in photo-cathode design and construction and 5 MeV Mott scattering electron spin polarimetry. GE has been his professional home since then.



Scott brings experience in a number of fields to his work: thin film optics design and fabrication, high energy particle detection, low energy atomic and nuclear H and D spin polarized beams, and polarized target preparation, as well as polarimetry methods for free electrons. He has also been a team lead for x-ray tube cathode engineering and advanced x-ray technology. He enjoys cycling, golf, rock-climbing, skiing and hiking, as well as travel.

#### Place:

Crossgates Restaurant, Albany, NY

#### Dinner:

Dining will be off the menu. Contact Lewis Stitt for details.

**THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS  
HUDSON MOHAWK SECTION  
PO BOX 206  
Schenectady, NY 12301**

**Reservations:**

To reserve your seat, contact Lewis Stitt (lstit@asme.org or 266-3540) or, if unable to reach Lewis, Fred Willett (542-8974) by noon April 29<sup>th</sup>.

**Directions:**

The restaurant is at the corner of Rapp Road and Washington Ave. Ext. It's next to the Polish-American Club and across the street from *Teresian House*. The entrance driveway is on the left past the Fire Station. Washington Avenue Extension can be reached via the Crossgates Mall exit from I-90 or I-87.

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