Joint Meeting with Long Island Section of the American Nuclear Society

Next Meeting . . . . . Wednesday, January 21, 2015
Where . . . . . Pollo Rico, Centereach, NY

*****John Weeks Lecture*****

Topic: A Robot for Studying Radioactive Materials at the X-ray Powder Diffraction Beamline at the National Synchrotron Light Source-II
Speaker: Lynne Ecker, BNL

Social Hour … 6 pm   Dinner … 7:00 pm   Meeting … 8:00 pm
Members …$25   Guests …$27   Students …$15
(New and recently transferred-in members free)

Please reserve (RSVP) by Tuesday: January 20, 2015 to Peter Indrigo at 631-589-6666 or email peterd@unitronusa.com

. WELCOME TO THE CHAPTER!

Nasser Al-Harbi, SABIC T&I   Amanda Erhart, Oerlikon Metco   Paul Kammer, Kammer Associates
Collin Olson, D'Addario   Terence Rouge, Clad Metal Specialties Inc.

All new members, including those who have transferred in from another Chapter, are invited to dine free at a regular meeting of their choice (not applicable to this wine tasting!). Please take us up on this offer - come along to the meeting and introduce yourself. This is an excellent way to meet with other Chapter members and to establish new business and social relationships in the area.
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**The Topic**

Advanced synchrotron-based methods will contribute crucial information to the characterization and quantification of steels and other advanced materials for nuclear energy applications. The contribution of composition, dose and irradiation temperature to the evolution of crystallographic phases, quantity of voids and irradiation-induced precipitation can all be systematically determined with synchrotron measurements using high-throughput experiments. A unique, new tool for characterization of radioactive materials is being developed at the X-ray Powder Diffraction Beamline (XPD) at the National Synchrotron Light Source – II (NSLS-II). XPD will deploy a novel, high throughput, robot for sample manipulation that will be specifically customized to accommodate radioactive samples (or multiple samples) up to 100 mrem/hr at 30cm in containment. The XPD facility at NSLS-II will soon offer unprecedented resolution performance while maintaining high levels of photon flux in the 30-70 keV x-ray energy range. XPD will provide High Resolution powder diffraction (XRD), total scattering (PDF), medium- or small-angle scattering (MAXS or SAXS with a resolution 1-100 nm), and tomography (CT). Opportunities also exist for *in-situ* and *in operando* structural science (variety of sample environments, complex materials in working conditions or in operating devices). In addition to the hardware being designed, automated data analysis techniques are being developed to handle the large quantities of data that will be generated with high-throughput experiments. Representative data from some of the techniques available at XPD (Rietveld fitting of XRD data, PDF and SAXS) will be presented for reactor pressure vessel steels and other advanced alloys.

**The Speaker**

Dr. Lynne Ecker has a PhD in Solid State Physics from Syracuse University. She is currently the Deputy Department Chair and lead for a group that provides materials science expertise in synchrotron and other characterization techniques to improve and develop materials for nuclear and energy technologies. This includes the development of techniques to study materials in extreme environments through *in-situ* environmental cells, furnaces and other specialized equipment for the synchrotron. She was employed for 8 years at Knolls Atomic Power Laboratory and has extensive experience in material phenomenon for nuclear reactors including elastic-plastic materials, thermal and irradiation creep, anisotropic swelling, fracture mechanics parameters, failure mechanisms, crack growth and contacting surfaces in complex mechanical systems and corrosion films.

**Directions to Pollo Rico Latin Bistro**

Pollo Rico is located at 2435 Middle Country Road (Rte. 25), Centereach. Probably the simplest way to get there from the LIE is to take Exit 62 (Nicolls Road) and go north on CR 97 (towards Stony Brook). Continue north for about 3 miles then take the exit to Rte. 25. At the traffic signals at the end of the ramp go left and head west (Smithtown). The restaurant will appear after about 1.5 miles, on the right side of the highway. Their telephone number is 631-471-0585. Their website is: [http://www.polloricolatinbistro.com/](http://www.polloricolatinbistro.com/).
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Long Island Chapter Meeting Schedule

Feb: 18, 2015 Topic: tbd
Place: Pollo Rico

Mar. 11, 2015 Topic: tbd
Place: Pollo Rico

April 15, 2015 Topic: Student Night
Place: Old Field Club

Metro NY-NJ Chapter
(http://metronynj.asminternational.org/portal/site/metronynj/)
No meetings in December, 2014 or January, 2015

Long Island Metal Workers Society
(website http://www.limws.org)

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