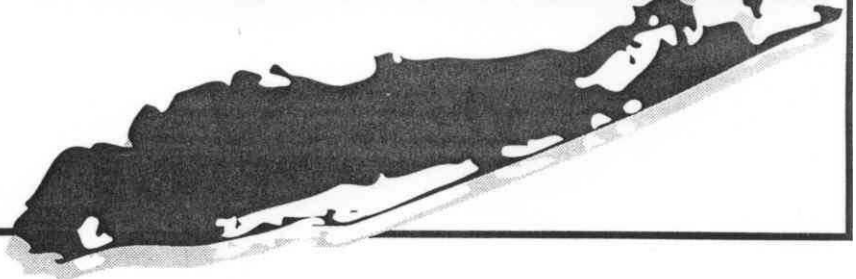




The Materials Information Society

LONG ISLAND CHAPTER

# METALLAGRAM



Volume 47 Issue 3

Chapter website: <http://www.matscieng.sunysb.edu/asm/>

**Next Meeting: Wednesday, November 16, 2005**

**Where: Burke & Shapiro Steakhouse, Smithtown, NY**

**\*\*\*\*\* Student Night \*\*\*\*\***

**Featuring oral and poster presentations by**

**Stony Brook University students**

*Meeting Start ... 6 pm (Wine & Beer 6-7 pm)*

*Dinner ... 7:00 pm*

*Speaker ... 8:00 pm*

*Members ... \$22   Guests ... \$25   ASM 25 years ... \$20   Students ... \$12*

*(New and recently transferred-in members free!)*

**Reservations appreciated - call Peter Indrigo (631-589-6666, ext. 2617)**

## **DIRECTIONS TO BURKE & SHAPIRO STEAKHOUSE (via the LIE)**

Take the LIE or the Southern State Parkway to the Sagtikos Parkway. Proceed northward on the Sagtikos Parkway, which eventually becomes the Sunken Meadow Parkway. Stay on the Sunken Meadow Parkway to Exit SM3E, Route 25 (Jericho Tpk.) East – Smithtown. Go east on Route 25 (Jericho Tpk.) for about 4 miles. You will pass under a LIRR trestle and a statue of the Smithtown Bull. Keep going on Route 25 (uphill), passing through two traffic signals. JUST BEFORE the second LIRR trestle, turn left on Elliot Place. Almost immediately, make the first right into the restaurant parking lot. The full address of the restaurant is 155 West Main Street and Elliot Place. Their phone number is (631) 265-3300.




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## **ORAL PRESENTATIONS**

### **High Temperature Dynamic Impact Tester**

**Students: Sal Kutub, Timothy Lee; Technical Advisor: Prof. Andrew Gouldstone**

**Abstract:** Contact mechanics methods (i.e. hardness, indentation) are often used to understand the mechanical properties of thick films on substrates. However, such systems are typically subjected to dynamic loads during service. In addition, a number of industrial characterization tests involve dynamic loading, from commercial systems to hammer strikes. No systematic test exists as yet. The goal in this project is to build a well-controlled impact tester for thermal spray coatings on substrates, with the capability to operate at elevated temperatures.

### **Apparatus to Laser Ablation Coat the Inner Diameter of Pipes**

**Students: Mir Anwar, Kelvin Montero ; Technical Advisor: Prof. Henry J. White**

**Abstract:** The cost of petrochemical based products is governed by the price of materials of construction used in the processing of hydrocarbons. To extend the life of the construction materials, coatings must be used to bring down the coking problem faced by the industry. The solution lies in coating the construction materials with a coke-resistant film. Laser ablation is a technique that is used to deposit coatings of a variety of materials on a suitable substrate. On a laboratory scale it could be used to coat the material on small coupons but on an industrial scale, a little engineering is involved to devise a mechanism to coat inside cylindrical surfaces.

Sometimes economics dictate the materials of construction to be used for a particular application. The use of more corrosion-resistant materials usually increases costs and tends not to be a viable option. A solution to this problem could be to use an inferior material and coat it to resist corrosion and extend life. On a laboratory scale this is usually done on coupons, but on an industrial scale it needs to be extended to coat both the inner and outer diameter of piping.

## **POSTER PRESENTATIONS**

### **Apparatus to wrap individual DNA molecules**

**Students: Gary Bunch, Peter Gin; Technical Advisor: Prof. Jon Sokolov**

*Abstract:* The biomedical industry has suffered over the course of time due to the inability to extract a length of DNA long enough in order to examine it in detail. The problem exists when just a few of the "code letters" are arranged in a manner unsuitable for healthy DNA, and that this arrangement must sometimes be viewed in a long strand of DNA to detect. Using conventional methods, only undesired lengths are obtainable, the longest presently equal to about 1 mm. The effect of having longer (up to 100 mm) strands of DNA would obviously yield a respectable leap and better data for use in disease control and understanding in the biomedical field. An apparatus capable of extruding a long single strand of DNA will be designed and built.

### **Crystal growth furnace for Synchrotron UV-assisted chemical vapor deposition of wide-bandgap semiconductor nanostructures.**

**Students: Jenee Gatkins, Vyonna Chweya; Technical Advisor: Prof. Carlos Rojo**

*Abstract:* The synthesis of wide-bandgap semiconductor low-dimensional structures is fundamental to the fabrication of enhanced electronic and photonic devices. However, controlling the nucleation and growth of low-dimensional structures (nano-wires and nano-porous particles) remains as one of the major challenges associated with bottom-up nanofabrication strategies. A synthesis reactor for GaN nanostructures will be installed in the U11 beamline at the NSLS at Brookhaven National Lab. The ultimate goal of this project will be to determine the effect of UV photons on the selective deposition of wide-bandgap nanostructures.

### **Development of a remote environmental chemistry laboratory for soil testing and monitoring.**

**Student: Ingrid Gaborova; Technical Advisor: Prof. Gary Halada**

*Abstract:* A remote sensing system with wireless Ethernet/internet compatibility that would allow for development of a remote environmental chemistry (soil testing and monitoring) laboratory. This would be linked to a web page for development of remote education lab experiments for middle school through high school (and possibly college) students. The sensing system is in regards to the remediation and understanding of "brownfield" sites, which are sites that have low to moderate levels of industrial byproducts or residue in likely contaminated areas.

### **Design of system to measure electrical properties of sprayed materials.**


**Student: Evan Rorke; Technical Advisor: Prof. Richard Gambino**

*Abstract:* This project is concerned with the design of a device that will test the electrical properties of sprayed materials. The device is intended to be used while being connected to a Keithley Multimeter to determine the material's electrical properties. The device works by connecting to the metal strips with four contact points, with one set working as a source of current and the other measuring the potential drop along the strip. The commercial application of the device is in the electronics field for both labs and companies who wish to establish the reproducibility of their fabrication processes.

### **Designing experimental tool for Raman Spectroscopy of organic molecules/materials.**

**Student: Chidiebere Nwankpa; Technical advisor: Prof. Gary Halada**

*Abstract:* The objective in this project is to adapt/modify an already existing spectrochemical prototype cell for use with an existing Raman spectroscopy microscope in the surface analysis and corrosion lab. Part of the objective is to utilize the cell in the examination of different organic molecules like citric acid, which is a minor organic acid with a PH of 1. We plan to use it in examining some large bio macro molecules found from degradation of organic molecules in order to investigate the interaction organic molecules with metals of different sorts and properties.



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**Metro NY-NJ Chapter Meetings**  
 (contact Rich Lynch @ 201-891-8399)

Nov. 17, 2005 Place: SBU Manhattan  
 Speaker: Robert Vecchio  
 Topic: Failure Analysis

Feb. 14, 2006 Place: L'Affaire Restaurant, Mountainside, NJ  
 Topic: Young Members Night

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## CHAPTER MEETING SCHEDULE

### Long Island Chapter

**Dec. 8, 2005** Place: Mauricio's, St. James  
Speaker: John Twilley  
Topic: Art Conservation

**Jan., 2006** Place: Brickhouse Brewery, Patchogue  
Joint meeting with LIANS

**Feb. 15, 2006** Place: TBD  
Speaker: Jim Quinn  
Topic: Rapid Prototyping at SBU

**Mar. 15, 2006** Place: BNL  
Tour of National Synchrotron Light Source

**Apr. 19, 2006** Place: Burke & Shapiro Steakhouse, Smithtown  
Topic: SBU Student Presentations

**May, 2006** Place: Martha Clara Vineyards  
Wine Tasting

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