



METALLAGRAM

LONG ISLAND CHAPTER



Volume 63 Issue 8

Chapter website: <http://DoL1.eng.sunysb.edu/asm/>

Next Meeting Monday, April 18, 2022 (not Wednesday)

Where Old Field Club, East Setauket, NY

******* Student Night *******

Oral and poster presentations by Stony Brook University Seniors

Joint Meeting with ESG/ESM Programs

6 pm...Start, Networking, Free Buffet, Cash Bar.

Limited number – pre-registration required (sorry - no walk-ins allowed)

Email Jim Quinn to secure your spot

RSVP james.quinn@stonybrook.edu

The Presentations

Controlled Atmosphere Sample Transfer System

Robert Anderson, Allen Bethencourt, Alvin Zhang, Nyron Sawh

The Quantum 2000 is an industrial grade XPS analyzer developed by PHI Physical Electronics. A controlled atmosphere sample transfer system would provide a mobile environment that can be purged of air contaminants via a Nitrogen or Argon gas. This will allow one to apply a final treatment (such as UV irradiation) before being placed in the analyzer. Possible customizations include: 1) The ability to attach non-permanently so it can be used only when needed; 2) Take measurements to confirm treatment application (likely via laser) before entering into analyzer; 3) Modular design for different treatments.

(Cont. ->)

The Presentations (cont.)

Thermoelectric Waste Heat Energy Harvester

Tyler Salmeri, Vivian Su, Steven Holder, Donald McMahon

Wood burning stoves are subject to energy losses as a result of several different processes, including convection through walls/structure, part removal, radiation and infiltration. While modern natural gas furnaces may run at efficiencies upwards of 98%, waste heat is still generated at sufficient enough levels for one to take advantage of the Seebeck Effect. By utilizing p-n junctions and the Seebeck effect, a thermoelectric generator would allow the generation of electric energy from the losses of heat. A thermoelectric generator device would be used for a wood burning stove and generate energy from the excess heat to charge an external battery for future use.

Z-Stream Device

Nazid Quadir, Evanna Plakas, Tonni Sherard, Roseann Walker, and Alexandra Zararis

Surface charge measurements are needed for many industrial applications such as wastewater treatment, paper making, and textile recycling for good quality products to be created. To find surface charge, you would calculate the zeta potential, which cannot be directly measured. We use streaming potential to find zeta potential. Our device will measure streaming potential, fluid conductivity, and pressure.

Permeability Test Cell

Sanjana Ali, Jordan Friedberg, Alvin Kim, Manosh Majumder

Permeability measurements are important for materials because it measures gas transport through materials, It is a standard measurement for organic and inorganic membranes which can be applied to many industries. Such industries consist of food packaging, fuel cells, and batteries. Our design, a permeability test cell, will allow these industries to measure the permeability of the membranes by measuring the pressure difference of the desired gas such as compressed air, helium, and oxygen.

Cryogenic Impact Tester

Minyao Zheng, Mujtaba Raja, and Zhongkai Wong

Studying the fracture surfaces of soft polymers is useful for many industries and educational institutions, such as universities, filter manufacturers, and companies. However, it can be difficult to produce a consistent break on soft polymers without making the sample brittle. With a cryogenic impact-tester, a sample immersed in liquid nitrogen, which will "freeze" the soft polymers and make them brittle, will be broken by a hammer immediately after it's out of liquid nitrogen. Cryogenic Impact-tester allows a clean fracture surface to be studied.



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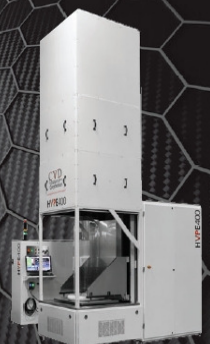
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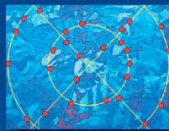
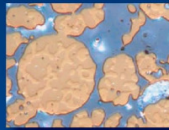
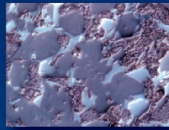
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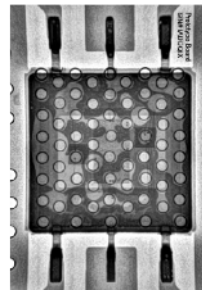
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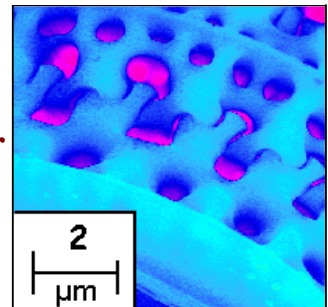
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Closed for the summer – back in September

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