The Syracuse Chemist

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Nanocomposite Seminar at SUNY-Cortland

Written by Venera Joureava

The Syracuse Section will cohost Dr. Michael Hagerman from Union College at SUNY-Cortland on September 29th at 7:00PM. The event is free and open to the public, although a $5 donation is suggested. Light refreshments will be served from 6-7 PM.

Dr. Hagerman was an NSF Undergraduate Summer Research Fellow in Solid State Chemistry (1990) at UC Santa Barbara working with Galen D. Stucky. He received his BS in Chemistry (1991) from North Central College in Naperville, Illinois. His senior honors thesis focused on zeolite heterogeneous catalysis research at Amoco Research Center collaborating with Robert A. Beyerlein. Hagerman continued his interests in solid state chemistry in his doctoral studies with Kenneth R. Poeppelmeier, Dow Professor of Chemistry, at Northwestern University receiving his MS (1992) and PhD in Inorganic Chemistry (1995). In 1995, he was named a Camille and Henry Dreyfus Fellow in Chemistry and traveled to Northern Arizona University in Flagstaff, Arizona. In 1997, he accepted a position as an Assistant Professor of Chemistry at Union College in Schenectady, New York. He teaches introductory chemistry, inorganic chemistry, and frontiers in nanotechnology and nanomaterials. His research interests focus on inorganic and materials chemistry applied to the synthesis and characterization of inorganic–organic nanocomposites with applications in chemical sensing, photonics, LEDs and solar cells. Prof. Hagerman is an Associate Professor of Chemistry at Union College.

Save the Date!

National Chemistry Week October 17-24

October 17th -Kick off at the MOST on

Free admission to the exhibits, hands-on activities, demo shows by local colleges, chemical jeopardy and local celebrities!

October 22, Sustainability Science Café in Oswego

October 23, Mole Day! Bake some of Sally's famous Moleasses Cookies!

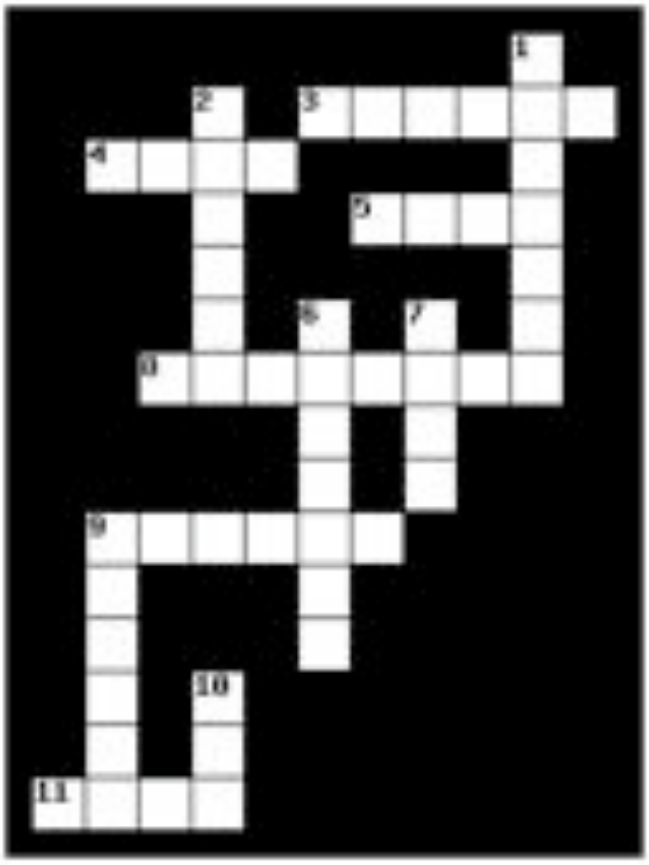
It's Elemental
October 17, 2009, 10AM - 5PM
National Chemistry Week at the MOST

The Education committee will be planning an all out extravaganza this year at the MOST. Hands-on activities, demos and more. The Syracuse Section and the MOST have reached a financial agreement to open the doors to the MOST exhibits free to everyone on October 17th.

The committee could use some help with fund raising in advance of the event, and set up and tear down on the day of the event. If you are interested, please contact Kelley Donaghy at kdonaghy@esf.edu. We'd like to have local companies buy a hands-on table that will be staffed by College students for the day. Set-up and tear down will run from 9-10 and again from 5-6. Any time or help you can give us will help make the day more successful.

Elements Known to the Ancients...

From: http://education.jlab.org last accessed, 9/21/2009



Across

3. Too soft for most tools, early people learned that this metal could be strengthened if it was alloyed with tin or zinc.
4. The ancient Romans used this metal to make water pipes.
5. Brass, a corrosion resistant alloy, is a mix of copper and this metal.
8. The ancient Egyptians made black eye make-up with this element.
9. A pale yellow material, this element can be found near volcanoes and hot springs.
11. The cheapest and most abundant of all metals, people have been using this element for at least 5,000 years.

Down

1. This liquid metal has been found in 3,500 year old Egyptian tombs.
2. Commonly found as coal or soot.
6. Although known to the ancients, this metal was often confused with lead and tin.
7. A soft, valuable metal, its purity is measured in carats.
9. Frequently used in jewelry, this metal is the best conductor of heat and electricity.
10. Bronze, the first alloy created by people, is a mix of copper and this metal.

Chemistry is Everywhere, celebrate it!

Get Ready for MOLE Day (10/23) with Grandma Button's Favorite Molasses Cookies!

Reactants needed:

****Note**** All reactants should be at room temperature during the following procedure. Do not double this recipe. (Trust Grandma Button)

- 135 grams partially hydrogenated soybean and cottonseed oils, mono and diglycerides
- 266 grams unrefined, dark, crystalline sugar
- 82.5 grams highest grade, pure, unsulphured, whole sugar cane juice
- 50 grams matured ovum with yolk overlaid with albumen proteins from *Gallus domesticus* female.

- 317.25 grams of a blend of hard and soft flours
- 0.0567 moles sodium chloride
- 7.167×10^{22} particles of sodium hydrogen carbonate
- 5mL dried and powdered rhizome of *Zingiber officinale*
- 5 grams dried and powdered inner bark of *Cinnamomum cassia*
- 1.25 cm^3 of dried and powdered flower-buds of *Eugenia caryophyllata*
-100 grams sucrose (this is in excess)

PROCEDURE:

PREHEAT OVEN TO 450 Kelvin

1. To a 2-liter bowl, add 135 grams partially hydrogenated soybean and cottonseed oils, mono and diglycerides and 266 grams unrefined, dark, crystalline sugar. Mix until a homogeneous mixture is obtained.
2. Now add 82.5 grams highest grade, pure, unsulphured, whole sugar cane juice. Stir until well-blended.
3. Add 50 grams matured ovum with yolk overlaid with albumen proteins from *Gallus domesticus* female. Stir until blended.
4. Add together in a 1-liter bowl: - 317.25 grams of a blend of hard and soft flours, 0.0567 moles sodium chloride, 7.167×10^{22} particles of sodium hydrogen carbonate, 5mL dried and powdered rhizome of *Zingiber officinale,* 5 grams dried and powdered inner bark of *Cinnamomum cassia,* 1.25 cm^3 of dried and powdered flower-buds of *Eugenia caryophyllata.* Mix gently to obtain a homogeneous mixture.
5. Add the dry reactants from the 1-liter bowl to the wet reactants in the 2-liter bowl. Slowly stir until well-blended.
6. Form 24.00 gram balls of mixture. Roll in a bowl containing 100 grams sucrose until each ball is well coated with sucrose.
7. Place 12 balls on 304.8 mm x 4.572 x 10^{-4} km cookie sheet lined with aluminum foil (shiny side up). You should have about 36 balls total.
8. Place the cookie sheet into the oven set at 450 K.
9. Bake for 0.007 days.
10. Carefully remove from oven using a hot mitt. Place on a heat protected surface and allow to come to room temperature (25°C.)
11. Ingest, digest, and egest, but most of all: ENJOY!

Molasses Cookies Recipe Con't

CONVERSION SHEET:

partially hydrogenated soybean and cottonseed oils, mono and diglycerides = ©Crisco shortening
1 cup of ©Crisco = 180 grams

unrefined, dark, crystalline sugar = dark brown sugar
16.625 grams dark brown sugar = 1 tablespoon
16 tablespoons = 1 cup

highest grade, pure, unsulphured, whole sugar cane juice = molasses
6.875 grams molasses = 1 teaspoon
3 teaspoons = 1 tablespoon

matured ovum with yolk overlaid with albumen proteins from Gallus domesticus female = chicken egg
1 large chicken egg with shell removed = 50 grams

blend of hard and soft flours = all-purpose flour
2/3 cup of all-purpose flour = 94 grams

sodium chloride = table salt
1 teaspoon table salt = 6.63 grams

sodium hydrogen carbonate = sodium bicarbonate = baking soda
1 mole = 6.02×10^{23} particles
1 teaspoon baking soda = 5 grams

dried and powdered rhizome of Zingiber officinale =ginger
5 mL = 1 metric teaspoon

dried and powdered inner bark of Cinnamomum cassia = cinnamon
1 metric teaspoon cinnamon = 2.5 grams

dried and powdered flower-buds of Eugenia caryophyllata = ground clove
1 cm^3 = 1mL

sucrose = table sugar
200 grams sucrose = 1 cup

Nanomole Mole Day Contest

Send us a picture of your organization, group or class enjoying Molasses cookies on Mole Day, October 23rd and receive free nanomoles for everyone! Send your pictures to Kelley Donaghy at kdonaghy@esf.edu. Don't forget to include how many nanomoles you need! Enjoy!

Please Post

Syracuse Local Section invites you to:

Laponite Nanocomposites for Solar Applications

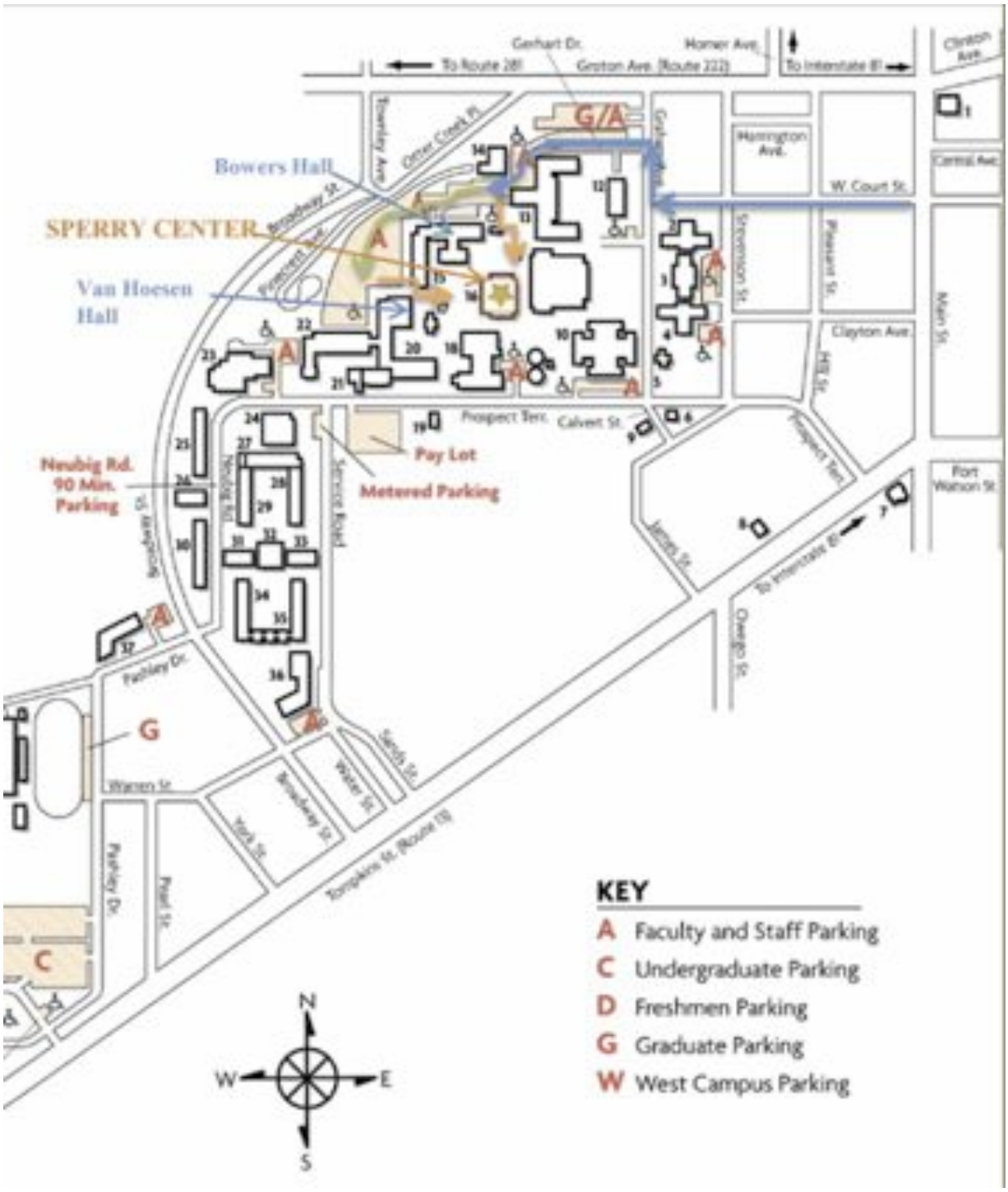
Dr. Michael E. Hagerman
Department of Chemistry, Union College, Schenectady, NY

Where: Sperry Center, Room 204, SUNY Cortland
When: September 29th at 7:00 p.m.
Social hour: 6-7 p.m. Light refreshments will be served
No reservations are required; suggested donation is $5

Abstract: Laponite films exhibit remarkable potential as versatile inorganicnanoscaffolds for the inclusion of transition metal complexes, polymers, and semiconductor nanocrystals for the development of sensors, LEDs and solar cells. We have employed facile soft chemistry strategies to synthesize conductive polymer and Laponite hybrid nanomaterials for the development heterojunction nanophotovoltaics. Layer-by-layer self-assembly methods were used to synthesize photofunctional devices in which polyaniline (an electron carrying polymer) and poly(3,4)ethylene-dioxythiophene (a hole carrying polymer) sandwich photoactive layers containing Ru polypyridine complexes and/or CdSe nanocrystals. Optically transparent films on conductive glass substrates were characterized using UV-VIS, FTIR, and fluorescence spectroscopies coupled with SEM, AFM and powder XRD to study energy transfer, polymer oxidation states, and nanomorphology. Through control of chromophore aggregations and in situ polymerization afforded by Laponite nanoparticle interactions, it is possible to build anisotropy at the interfaces of the host and the guest. The ability to synthesize and study anisotropic, self-assembled Nanostructures offers new strategies to tune photoefficiencies, control charge separation and limit electron-hole recombination.

Directions: Take Interstate 81 south to Cortland Exit 11.
Turn right off the exit ramp onto Clinton Avenue Extension.
At the second traffic light take a right on Clinton Avenue/Route 13.
Drive approximately one mile, get into the center lane and make a left-hand turn at the light onto Church Street.
From Church Street make a right-hand turn onto West Court Street.
Take West Court Street to the top of the hill and make a right-hand turn onto Graham Avenue.

Map of SUNY-Cortland



Syracuse Section First to Receive Sustainability Grant

Thanks to Venera Joureava who received the first ever Sustainability grant from the American Chemical Society National Organization. The grant will be used to fund the third Science Café in Oswego, during National Chemistry Week.

The theme of the next science cafe is "What Can You Do Individually About Global Climate Change?" It will be held in the spacious basement of the Oswego Public Library., 120 E 2nd St., from 6 to 8 PM on October 22nd. NYSERDA representative, Chris Carrick, will talk about grants and incentives available to NY State residents willing to improve the energy efficiency of their homes. His presentation will be followed by a panel discussion. Our panelists are environmental activists who have successfully installed solar, wind, or geothermal energy systems at their homes. Snacks will be provided; the event is free of charge and open to public.

Save These Dates!!

Syracuse Section Schedule

The Executive Committee met in August to develop a schedule of events for the Fall and to sketch out a Spring schedule. Again, we are a great section with lots of exciting things planned, I hope you'll put something on your calendar and join us at an event!

Fall Schedule

September - Nanotechnology talk at SUNY-Cortland (Michael Hagerman from Union College)
October 17th - National Chemistry Week Event at the MOST
October 22nd - Sustainability Science Café in SUNY-Oswego (presenter and students working on sustainability topics)
October 31st - Spooktacular at East Syracuse-Minoa High School
December 10th - Annual State of the Section Dinner

Spring Schedule

January 30th - High School Science Olympiad
March 6th - Middle School Science Olympiad
March - Science Fair Months (GSSSF/??????/Utica Science)
April 7th - Dinner meeting at Utica College
April 22nd - Chemists Celebrate Earth Day
April 24th - Adopt-a-Stream
June 16th - Education Night at the Zoo

Help Needed! Can you spare a few hours four of five times a year? Do you like to plan events, do you have great ideas that you would like to share? The Executive Committee needs you! Please contact one of us to see how you can get involved. This year we need a Treasurer, Chair-Elect, Secretary and District Delegates, are you looking to show your friends and colleagues that you are leadership material? Here's an excellent proving ground! Call for nominations coming to a computer near you this Fall!

Syracuse Chemist

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Deadline for material:

September 2009 Issue is September 5, 2009. Please send submissions to donaghykj@gmail.com

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Organized as the Syracuse Chemical Society in 1902 and chartered as a section of the American Chemical Society in 1907, the Syracuse Section now includes Central New York counties of Cayuga, Cortland, Madison, Oneida, Onondaga, Oswego and Seneca.

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Upcoming Schedule of Events

SEPTEMBER

9/29 Nanotechnology Meeting at SUNY-Cortland

OCTOBER

National Chemistry Week - 10/18-10/25

MOST Celebration 10/17

Sustainability Science Café 10/22

ESM Spooktakular 10/31

DECEMBER

State of the Section Dinner Meeting

Have an idea for a great event? Please contact a member of the Executive Committee or join us at a meeting!

Winner of last month's challenge:

The answer to last month's challenge was osmium. Thanks to Shiuli Mahumud for correctly answering our challenge!

Here's this month's challenge:

When rounded to four significant figures, the atomic mass of element 1 is exactly the square root of the atomic mass of element 2. What are elements 1 and 2?

Playing for Free MOST tickets with IMAXMovie!

THE SYRACUSE CHEMIST
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