



April Dinner Meeting & Poster Session

SJVACS Student Member Poster Session: Saint Mary's Students will Present Posters Submitted at 2012 Spring National Meeting

Monday, April 23rd, 2012

Social Time: 5:30-6:00 (Cash Bar)
Dinner: 6:00-7:00
Talk /Poster Session: 7:00-8:30 Brief Introduction of Presenters and Topics – Informal Walk Around for Q & A

Dinner Location: Reggio's, 1213 E Jefferson St Mishawaka, IN (255-0588)

Menu: Prime Rib, Baked Chicken & Pasta Buffet

Dinner Cost: \$10 ACS Members & Guests

Poster Abstracts:

Characterization of Paper Analytical Devices Taylor Chamberlain

The purpose of this research was to determine a fabrication process that would enable the efficient production of effective Paper Analytical Devices (PADs). A PAD is a piece of paper that has been chemically treated in some way to create hydrophilic channels surrounded by hydrophobic areas. A variety of paper substrates were cataloged and tested in an effort to determine the substrate that most closely corresponded with the needs and purposes of a particular set of tests. Several paper characteristics were measured, including rate of liquid flow over a preset distance, pH, and density. Through these studies, this research has determined effective methods for fabricating PADs.

Developing Simple Colorimetric Verification Tests for Antibiotics on PADs (Paper Analytical Devices) Mary Bevilacqua and Liz Robbins

Pharmaceutical counterfeiting is a serious problem facing developing nations. Inadequate or inappropriate antibiotics may lead to insufficient treatment of infected individuals as well as to an increased rate of antimicrobial resistance. The PADs team is developing simple colorimetric tests to semi-quantitatively and qualitatively determine the validity of an antibiotic sample. PAD-based tests are designed to be stable on paper and develop results rapidly. They are intended to be inexpensive to produce and easy to perform, even in non-laboratory environments. The PAD is impregnated with colorimetric indicator reagents, and then exposed to the pharmaceutical analyte to verify active ingredient concentration. Antibiotic directed PADs will test for Cloxacillin, Erythromycin and other commonly prescribed agents. These and other PADs may improve health care in multiple settings including developing nations.

Colorimetric Determination of Amodiaquine Meghann Mouratides

Though malaria is a curable disease, hundreds of thousands die in underprivileged countries because of the prevalence of counterfeit drugs. Artemisinin-based antimalarials are currently the recommended treatment for malaria. In order to combat the development of resistance to these drugs, they are administered in combination with other antimalarials such as amodiaquine. These combination drugs are just as likely to be counterfeited as their artemisinin-based partners and are crucial to the treatment's success. We have developed a low-tech colorimetric test that could be used in developing countries by non-scientists to determine the legitimacy of amodiaquine. The test is performed on a paper substrate and uses a cobalt (II) thiocyanate (Co(SCN)₂) indicator, which exhibits a blue to green color change in the presence of amodiaquine. The simplicity and low cost of this test could help save the lives of those who would otherwise attempt to treat this deadly illness with a counterfeit. Additionally, the introduction of this and other such field tests could help prevent resistance to artemisinin-based antimalarials by removing underdosed drugs from the market.

Trapped Charge Dynamics Depending on the Length of Ligands Binding to the Surface of Solid State Quantum Dots Teresa Cristarella

There is interest in the study of quantum dots (QDs) for potential use in solar cells. QDs are a type of nanoparticles made from a semiconductor material and have very unique properties, as discussed in this paper. It is thought that this material could replace silicon (Si) in solar cells because it has a unique property referred to as a tunable band gap and is estimated to be significantly less expensive than Si solar cells. This experiment examined kinetic decay data of lead(II) sulfide (PbS) QDs capped with a series of ligands with a thiol group on the end of an alkane chain of varying length. These ligands range from 1,2-ethanedithiol to 1,6-hexanedithiol, each increasing in length by one carbon atom. Thin films, that is a film applied to a substrate that is on the hundreds of nanometers in scale for thickness, were prepared via the drop casting method and analyzed via time resolved-infrared (TR-IR) spectroscopy experiments. The time scale of the kinetic decay is related to the charge recombination and is determined by the depth of the charge trap. Deeper traps are related to slower recombination and thus are detrimental to solar cells. This study observed a fast decay with 1,6-hexanedithiol (HDT). A possible explanation is that the conformation of HDT allows it to bend and interact with the surface of the QD as a bidentate ligand.

RSVP: Pat Boettcher (boett@infionline.net or Phone: 574-360-4985) by Friday April 20th

**2012 Section Officers**

Chair – Dan Brown
Bayer Healthcare–Diabetes Care
W- 574-256-7754
F- 574-258-6815
Daniel.Brown@bayer.com

Chair Elect – Matt Odom
Bayer Healthcare–Diabetes Care
W- 574-256-7797
F- 574-258-6815
Matt.Odom@bayer.com

Past Chair – Dan Brown
Bayer Healthcare–Diabetes Care
W- 574-256-7754
F- 574-258-6815
Daniel.Brown@bayer.com

Secretary- Roger Fleming
Bayer Healthcare–Diabetes Care
W- 574-256-3280
F- 574-258-6815
Roger.Fleming@bayer.com

Councilor-Abe Brubaker
W -
F -
brubaker.phd@gmail.com

Alt Councilor - Andy Edelbrock
Bayer Healthcare–Diabetes Care
W- 574-256-3443
F- 574-258-6815
Andy.Edelbrock@bayer.com

Member at Large- Phil Bays
Saint Mary's College-Retired
W - 574-284-4663
F -
pbays@saintmarys.edu

Treasurer - Pat Boettcher
C- 574-360-4985
boett@infionline.net

**Filterpaper Editor & Webmaster–
Andy Edelbrock**
Bayer Healthcare–Diabetes Care
W- 574-256-3443
F- 574-258-6815
Andy.Edelbrock.b@bayer.com

NCW – Patsy Boehler
ETHOS
W- 574-266-7149
F-
patsy@ethosinc.org

Website: <http://stjoevalley.sites.acs.org/>

Executive Committee Meeting Minutes

**Saint Joseph Valley Section (ACS)
Executive Committee Minutes
February 29th 2012**

Present: Dan Brown (Chair & Past Chair), Andy Edelbrock (Filter Paper Editor, Alt. Councilor & Webmaster), Pat Boettcher (Treasurer), Roger Fleming (Secretary) & Abe Brubaker (Councilor)

Resolutions Approved:**ACS National Meeting:**

Abe Brubaker will attend the ACS national meeting in March in San Diego as chapter councilor. He should arrange travel plans as soon as possible to minimize airline expenses.

Andy Edelbrock should discuss travel to the Fall National meeting with his supervisor.

Approved \$800 to support sending 8 St. Mary's students to the ACS meeting to present posters. They will be asked to present at the April meeting at a date of their choosing. The meeting will be scheduled around their earliest availability.

Action Items

Phil Bays is to report on the number of Merck Indexes in his inventory for availability for as gifts for students at the honors meeting and such.

Doug Sisk (Chem Olympiad) and **Mary Prorok & Phil Bays** (SEED coordinators) will be informed of the expanded eligibility of the Bitting-Free scholarship.

Andy Edelbrock will publicize the application and expanded eligibility in the Filter Paper and on the Web Site.

Pat Boettcher will inform the Saint Mary's students of the \$100 travel support for attending the ACS National meeting.

Patsy Boehler to check with her contacts at Monsanto to see if Monsanto is interested in hosting or presenting at a chapter meeting.

Patsy Boehler will select a date with the UND Nanotechnology Center for a tour and meeting to honor Chem Olympiad participants.

Treasurer's Report

As of 2/6/12 the chapter's balance was \$25,428.26. \$7,840.92 is liquid in checking.

Other Discussions

Executive Council members Andy, Patsy, Matt, and Dan enjoyed the Engineers Week banquet. The chapter paid \$800 for attendance (including \$400 from the ACS attendees). There were two no-shows. The glass baker mugs provided by the local section were well received as door prizes and could be reconsidered for next year.

The application for the Bitting – Free scholarship has been updated to include Chem Olympiad and SEED students for eligibility. Preference will still be granted to ACS dependents and grandchildren. The scholarship will be \$500 renewable with reapplication. There will be one renewing and 1 new scholarship awarded next year.

We had not heard back from the current NIRSEF coordinator regarding acceptance of the chapter cash gifts the top three winner awards. Andy said in the past NIRSEF generated the checks and certificates for Bayer Science forum awards. We need to make our connections so NIRSEF knows of our interest in providing cash awards and certificates.

Respectively submitted,

Roger