

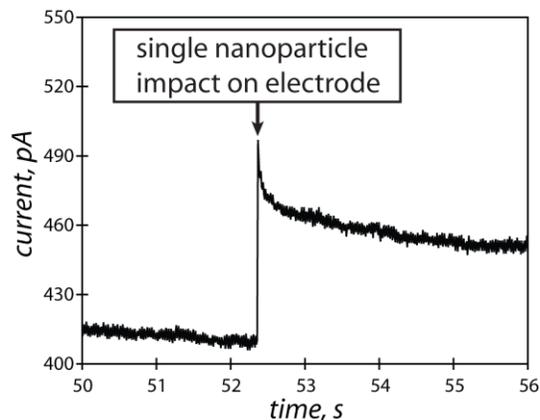
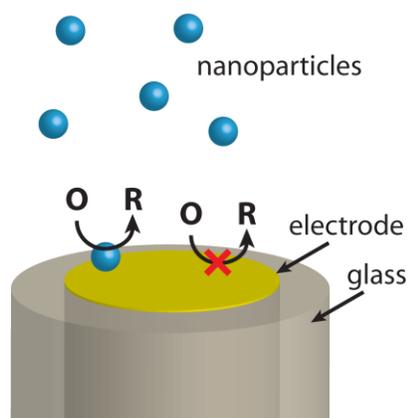
## Fall Speaker, Dr. Scott Thorgaard

Dr. Scott Thorgard will be our first speaker for the fall season. The talk will be given at the MSU Bioeconomy Institute in Holland, Michigan on Wednesday, September 27. A tour of the facilities will begin at 6:00 PM for those who are interested (see labs and pilot plant facilities) followed by the talk which will begin at 7:00. Members with 50 or 60 years of ACS membership will also be honored and presented with certificates. Please plan on coming out for an interesting evening!

### Electrochemical Collisions for Single Nanoparticle Analysis Scott N. Thorgaard, Grand Valley State University

Electroanalytical methods based on *electrochemical collisions* have enabled the time-resolved detection of single nanoscale objects. In these experiments, individual nanoparticles (or biologicals) are detected in solution by their ability to enhance or inhibit electron transfer reactions occurring at an ultramicroelectrode (UME) when they strike the electrode surface. Electrochemical collisions have shown promise for investigations of nanomaterials at pM to fM concentrations, and have recently been applied to numerous systems including the characterization of metal and semiconductor nanoparticles, and the selective detection of single viruses.

In my research group at Grand Valley State University, we are applying electrochemical collisions in multiple projects which will be highlighted in my talk. One project has focused on the detection of single metal nanoparticles using a variant of electrochemical collisions based on catalytic amplification. This project aims to probe differences in catalytic activity for different nanoparticle materials on a single particle basis. Our experiments to date have monitored electrochemistry occurring at single Pt, Rh, Ir, and Au nanoparticles. A second project has focused on the detection of electrically insulating particles by their ability to inhibit (block) mass transport at a UME. We have been successful in applying blocking collisions for the detection of *E. coli* bacteria at fM concentrations. Incorporation of simultaneous fluorescence imaging to the electrochemical experiments allowed further elucidation of single bacteria adsorption events at UMEs. The ongoing objectives of our work are to extend electrochemical collisions to new analytes and ultimately develop novel schemes for nanomaterials characterization.



### **Fifty and Sixty Year Members to be Honored at First Fall Meeting**

At our first fall meeting on September 27 at the MSU Bioeconomy Institute in Holland, Michigan, eleven of our long term members will be honored. Certificates marking their years of service and membership with the ACS will be presented to those able to attend. Certificates will be mailed to those honorees unable to make the meeting.

Five members have attained fifty years of membership and six have achieved sixty years with the ACS! Refreshments will be served. The honorees are listed below:

#### ***Fifty Year Members:***

Dr. Larry Crawley, Byron Center  
Dr. Norton Peet, Holland  
Dr. James Przybytek, West Olive  
Dr. Gary Richmond, Jenison  
Dr. William Suggs, Ada

#### ***Sixty Year Members:***

Dr. Irwin Brink, Holland  
Dr. David Kaiser, Grand Rapids  
Dr. Charles Kulier, Holland  
Mr. Floyd Schnell, Fremont  
Dr. George Vande Woude, Belmont  
Dr. Kenneth Vos, Grand Rapids

### **Facilities Tour**

The MSU Bioeconomy Institute <http://bioeconomy.msu.edu> (242 Howard Ave, Holland, MI) will be giving a tour of their facilities just prior to our first fall meeting. The tour will be given on Wednesday, September 27 and will begin at 6:00 PM. Pilot plant facilities and labs will be toured. Please plan on taking in this tour and then staying for the meeting at 7:00 PM.

### **October Meeting Speaker – Justin Shorb from Hope College**

Dr. Shorb's talk will focus on Chemical education and a brief outline from him is given below:

Each year instructors are given the opportunity to put more and more learning material online. As chemical education researchers, we have years of literature that informs our teaching, but there is a need for tools to evaluate online materials in a more robust manner. We have been validating eye-tracking as a tool for evaluation of student understanding of representations online. Viewing patterns are compared between experts and novices and validated against previous studies so that eye-tracking will have reliable application in understanding conceptual links being made during student engagement with online materials.

A tentative date and location are Oct. 25 in Kindschi Hall at GVSU Allendale Campus. Final details will be sent out at a later date.

### National Chemistry Week 2017

This year join us as the ACS celebrates National Chemistry Week (October 22 – 28). The theme this year is "Chemistry Rocks!" - Exploring the Chemistry of Rocks and Minerals. Our section will once again be involved by having chemical demonstrations and activities for the community at **Woodland Mall on Saturday, October 21, 2017** and will run from 10:00 AM until 2:00 PM. Location will be near the Macy's store. Our coordinator, Michelle DeWitt ([dewittmi@gvsu.edu](mailto:dewittmi@gvsu.edu)) has been busy organizing this event. Please contact her if you wish to host a booth for your school or business.

Also, if anyone would like to volunteer to help with the ACS poster booth (free T-Shirt for all volunteers) please let Michelle know by October 1st with your shirt size. If you are hosting a booth also let Michelle know a total number of T-shirts and sizes by October 1st.



Items for the Newsletter may be submitted to James Krikke (GVSU) at [krikkeji@gvsu.edu](mailto:krikkeji@gvsu.edu)