# American Chemical Society
# *East Texas Section*
# April 2017

**Next Section Meeting**

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| Date: | Thursday, April 6 |
| Place: | Berry Auditorium (C101)<br>Glaske Science and Engineering Building<br>LeTourneau University<br>Longview, TX |
| Dinner: | On your own |
| Time: | Speaker 7:00 P.M. (No charge for the talk) |

## Student Research Presentations

### Electrochemical methods for the detection of illicit drugs
**Darlene Ishimwe**

This research focuses on the use of electrochemical devices for identification and quantification of chemical compounds in forensic chemistry. By determining the reduction and oxidation of chemical compounds, electrochemical devices provide an accurate and fast way to analyses and detect a range of concentration of illicit drugs. This portion of the research, aims at detecting the redox reaction of caffeine in order to be able to perform the same experiments with illicit drugs.

Bio

Raised in Rwanda, I am from East Africa with a Burundian and Rwandan nationality. I'm a junior in Biomedical Engineering and would like to later put focus on Bioinstrumentation. As future plans, I would like to work in the development of cost affordable medical devices and medical imaging to be used in developing countries and anywhere else needed.

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### Zapping Reactions and Imagining New Lithium-Ion Batteries: Practical and Theoretical LeTourneau Chemistry Research
**Darby Ball**

As the title implies, this presentation will be split between two sets of chemistry research performed at LeTourneau University. The first set is the testing and optimization of several organic reactions in a
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home microwave modified to perform reflux reactions with Dr. Hathaway. The second is the first principle development of Gilbert-Ida potentials of oxy-sulfide glasses from cluster calculations with Dr. DeBoer.

Many organic reactions take significant time to complete, which can be detrimental to an undergraduate lab experience. The goal of this study was to investigate the viability of performing several organic reactions in a home microwave modified to allow reflux, with a particular focus on the Diels-Alder reaction between substituted N-phenylmaleimides and anthracene. In a typical lab setup, the reaction took upwards of an hour, with significant time spent on just getting the solution up to a high enough temperature to react. In a microwave oven, the solution can in minutes be raised to the same temperatures, greatly reducing the time spent on the reaction. This study compared yields and purity of product, and in the case of this Diels-Alder reaction, found the microwave reaction to be comparable while saving time.

Lithium-ion batteries have enabled a dramatic revolution in portable electronics while currently operating a full 10 times below their theoretical capacity. Current lithium-ion batteries use flammable organic liquid electrolytes which can be replaced with a solid electrolyte to enable the safe use of significantly higher capacity lithium metal anodes. The goal of this study is to develop accurate, predictive parameters for atomic interactions of the lithium ion with the solid, glass electrolytes of varying oxy-sulfide compositions: $Li_2SiO_3$ and $Li_2SiS_3$, and $Li_2SiO_{(3-x)}S_x$. Using the electronic structure program Gaussian 09, potential energy scans were performed on small molecule clusters in a simulated crystalline structure, using several different basis sets at a Hartree-Fock level. The data was fit to obtain pairwise Gilbert-Ida potential parameters which can be used in molecular dynamics studies using LAMMPS to model $Li^+$ mobility in the oxy-sulfide glass systems.

Bio

I, Darby Ball, was born in Indiana and raised in Longview, Texas. I am a graduating senior at LeTourneau University majoring in Chemistry with a Biological Concentration. I have been applying to graduate programs in Texas and plan to pursue a PhD in Chemistry.

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## Determining Correlations between the Effects of El Nino and Flooding Along the Red River in Shreveport, Louisiana

**Julianna Glinskas**

Flooding along the Red River is rare across portions of the Red River Basin of Northwest Louisiana. However, several events of heavy rainfall fell across the middle and lower portions of the Red River Basin of Southern Oklahoma, Northeast Texas, Southwest Arkansas, and Northwest Louisiana between May 2015 and May 2016, resulting in multiple flood crests along numerous points between Lake Texoma along the Texas-Oklahoma border to Alexandria, Louisiana.

This accounted for five separate flood crests at the Red River in Shreveport, Louisiana, including the highest crest since April 1945 and the first flood since May 1990. These series of crests occurred during one of the strongest El Niño events on record. Several other flood and near flood crests are also noted in Shreveport's history during past El Niño events since 1950.

This study will compare synoptic patterns and rainfall distributions during past El Niño events when flooding occurred along the Red River in Shreveport. The synoptic patterns associated with El Niño will
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also be compared with the 1950-2015 means for that time period. In addition, past flood event analysis and impacts will be addressed to determine any correlations between the effects of El Niño, as well as other potential atmospheric, geologic, and manmade factors that may have contributed to the increased instances of flooding along the Red River in Shreveport.

Bio

Julianna Glinskas is a junior Chemistry major from Modesto, California. She spent the last two summers as an intern with the National Weather Service in Shreveport, Louisiana.

**Upcoming Dates**

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| April 2-6 | ACS Spring National Meeting, San Francisco, CA |
| April 6 | Student Research Presentations, LeTourneau University, Longview |
| August 20-24 | ACS Fall National Meeting, Washington, DC |
| September | Student Research Presentations, UT-Tyler, Tyler |
| October | TBD, East Texas Baptist University, Marshall |
| October 29- November 1 | Southwest Regional Meeting, Lubbock, TX |
| November | Joe Jeffers, Panola College, Carthage |

**2017 Section Officers**

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**Section Website:** **http://easttexasacs.sites.acs.org/**

**From the March meeting at Kilgore College**


**About ACS Webinars™**

ACS Webinars™ is a free, weekly online event serving to connect ACS members and scientific professionals with subject matter experts and global thought leaders in chemical sciences, management, and business. The ACS Webinars are divided into several series that address topics of interest to the chemical and scientific community; these series include careers, business and innovation, professional growth, joy of science, extreme chemistry, entrepreneurial initiative, green chemistry, and more. Each webinar is 60 minutes in length, comprising a short presentation followed by Q&A with the speaker. The live webinars are held on Thursdays from 2-3pm ET. Recordings of the webinars are available online and upcoming events are posted at http://acswebinars.org/.

**Upcoming ACS Webinars**

**April 13**

The Good, the Bad and the Uncertain: Public Perception of the Chemical Enterprise
https://www.acs.org/content/acs/en/acs-webinars/business-entrepreneurship/public-perception.html

Chemistry enables the best of the modern world, keeping us better fed, more healthy and with more leisure activities than at any time in history. Yet, we live in a time when much of society is averse to chemicals. Mark Jones will join us to share some examples of good done by the chemical enterprise and lead a discussion of the origin of chemistry's bad reputation. Chemists, dating back to the alchemists, expand what is possible in nature and, in so doing, made great improvements. Unpleasant surprises have come with the advances, fueling negative views of chemistry. More commonly, ambiguity in what constitutes acceptable risks creates uncertainty that taints the enterprise. Chemistry's unique position as the only science that alters the natural world is changing. Chemists, with centuries of experience, provide the experience base to guide future development.

**April 20**

Cystic Fibrosis: Discovery of CFTR Modulators
https://www.acs.org/content/acs/en/acs-webinars/drug-discovery/cystic-fibrosis.html

How are modern day chemists seeking to treat cystic fibrosis? Join Peter Grootenhuis of Vertex Pharmaceuticals as he delivers a brief overview of the drug discovery approaches and challenges to identify small molecules CFTR modulators. These compounds improve the trafficking, processing and/or restore the function of the mutant CFTR protein and address the primary cause of cystic fibrosis.

**May 4**

Insourcing and Outsourcing in R&D: Trends in the Pharma Industry
https://www.acs.org/content/acs/en/acs-webinars/business-entrepreneurship/insourcing.html

Successful application of insource and outsource services is critical to the R&D pipelines of the future. Join Michael Trova of AMRI and Mike McCoy of *Chemical & Engineering News* as they provide an overview of the traditional outsourcing model for drug development as well as the rising trend of working with an insourced partner. We will explore the benefits of each and provide insights for our participants on the best way to evaluate which model is right for them.

**May 18**

Nanomaterial Design Guided by the Principles of Green Chemistry
https://www.acs.org/content/acs/en/acs-webinars/technology-innovation/green-nano.html

How can green chemistry be applied to nanotechnology to achieve the high performance needed for advanced applications while preventing or reducing health and environmental impacts? Join James Hutchison from the University of Oregon as he discusses the foundations for greener nanotechnology and presents a case study that uses nanomaterial product innovation guided by green chemistry.

# LeTourneau University

1. Belcher Center

2. Longview Hall

3. Heath Hardwick Hall

4. Education Building

5. Estes Library

6. Memorial Student Center

7. Solheim Recreation Center

8. Glaske Science and Engineering Building

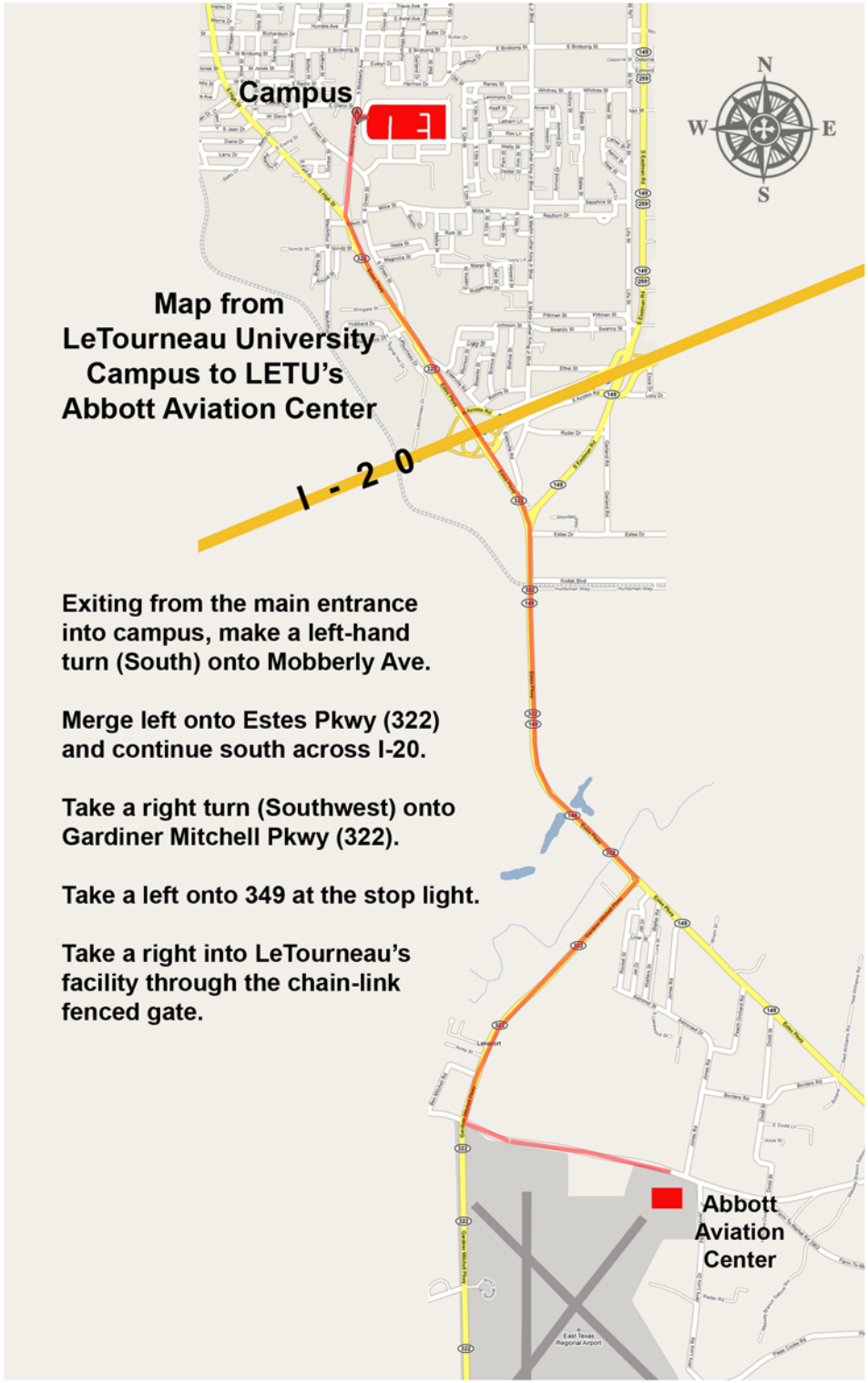
9. Student Life
10. Development / Alumni
11. Machine Tool / Design Lab
12. Civil Engineering
13. Engineering
14. Business Office
15. Corner Cafe
16. Materials Joining
17. Information Technology
18. University Police
19. Automotive Society
20. Facilities Services
21. Speer Chapel
22. South Hall
23. Gilbert Hall
24. Thomas Hall
25. Davis Hall

26. The Trinities
a. Mabee b. Pennsylvania c. LeTourneau
27. The Quads
a. Durham b. McKinley c. Howe d. Carpenter
28. Village Apartments
29. Married Housing
30. AO Society
31. KZX Society
32. LAS Society
33. Tyler Hall West
34. Tyler Hall East
35. Founders' Gravesites
36. Equipment Park
37. Belltower
38. Joyce Athletic Village
39. Allen Family Student Center


In addition to the facilities listed on this map, LeTourneau's Abbott Aviation Center is located a short, 7-mile drive from the campus at the East Texas Regional Airport.

# Longview, Texas

About Longview: Just two hours east of Dallas, Texas • About an hour west of Shreveport, La. • Serves as a central city for smaller, nearby towns • Has a Metropolitan Statistical Area (MSA) of 150,000 in population • Entertainment: movie theaters · great restaurants · mall · several shopping centers • Culture: symphony · public library · museums · community theater · opera • Major annual events, including the Great Texas Balloon Race and AlleyFest • Over 100 places of worship • Several area state parks for camping, hiking and picnicking • Over 25 lakes within 75 miles • Mild winters, with colorful springs and autumns • Nice mix of rain and sunshine all year


**Map from LeTourneau University Campus to LETU's Abbott Aviation Center**

**Exiting from the main entrance into campus, make a left-hand turn (South) onto Mobberly Ave.**

**Merge left onto Estes Pkwy (322) and continue south across I-20.**

**Take a right turn (Southwest) onto Gardiner Mitchell Pkwy (322).**

**Take a left onto 349 at the stop light.**

**Take a right into LeTourneau's facility through the chain-link fenced gate.**