



Society of Tribologists and Lubrication Engineers

Houston Section

## January 11, 2018 Technical Meeting

### Welcome to STLE Houston Chapter's 2018-2019 Lunch Seminar Series!

Our fifth technical seminar of the season will be held on **FRIDAY**, January 11, 2019 at Maggiano's Little Italy, starting off with networking at 11 AM. We will have two speakers: **Yan Chen, Ph D. student at Texas A&M** will be presenting "**Nanoparticle Additives in Grease**"; and **Brady Reed, Associate Engineer for McDermott International** will be presenting "**Effects of Nanomaterials on Bacteria**". Please reserve the date!

#### Abstracts:

Grease can reduce friction and provide protection against wear in a tribological system. In this research, the effects of  $\alpha$ - zirconium phosphate nanoparticles as additives in grease was investigated. The galling behavior of a pair of steels (4130 against P530) was used in this research. Results showed that the addition of 0.5wt% of nanoparticles in grease could reduce the friction for 10% and the area being galled for 80%. In terms of particle sizes, the  $1\mu m$ -sized particles have profound influence in galling reduction. The anti-galling effect was due to the increased contribution of van der Waals forces in the stacked layers of those particles. Under shear, those particles were exfoliated, resulting in low friction and more surface coverage to protect surfaces.

Microbial contamination of metalworking fluids is a major problem in the metalworking industry. The wide range of bacterial species and problems with current treatment methods (including microbial resistance) makes microbial contamination a non-trivial problem. Preliminary results show that gold (Au) and silver (Ag) nanoparticles are shown to have excellent antibacterial properties against E. coli. This work also introduces the use of nanomaterials to treat bacterial contamination of metalworking fluids.

#### Speakers:

Yan Chen is a Ph D. student in material science and engineering department at Texas A&M University. After graduating from Northeastern University in China, he spent 2 years in Zigong cemented carbide as an engineer. He then acquired a Master's degree in Materials Engineering from Auburn University in 2016. Currently, he was pursuing his Ph.D degree with a focus on the application of nanotechnology in lubricants. In his free time, Christopher enjoys cooking BBQ and traveling.

Brady Reed is an Associate Engineer for McDermott International Inc., participating in the Graduate Development Program (starting in January 2019). He recently interned at Oak Ridge National Laboratory (August -December 2018) studying grid-to-rod fretting (GTRF) wear in pressurized water nuclear reactors (PWRs) for an industrial client. Brady graduated from Texas A&M University in December 2018 (M.S. Mechanical Engineering) and Baylor University in 2015 (B.S. Mathematics, minors in Biology and Biochemistry). His primary focus in graduate school were nanomaterials, biomaterials, and devices, with a focus on applications. His thesis, "Effects of Nanomaterials on Bacteria," focused on nanoparticle/nanostructure and bacteria interactions in vitro, microbiologically-induced corrosion (MIC), and microbiology and treatment of contaminated metalworking fluids.

**Location :** [Maggiano's Little Italy](#), 2019 Post Oak Boulevard, Houston, Texas 77056  
(Note that parking is available in the adjacent shopping center)

**Schedule:**

11:00AM - 11:30AM: Arrival / Social  
 11:30AM - 12:00PM: Lunch  
 12:00PM - 1:00PM: Business Meeting and Technical Presentation

**Fees (note that fees were raised \$5 starting in 2019):**

Students \$15, Members \$40, Non-Members \$45  
 Cash/check/Visa/MC accepted at the door – or **pre-pay** by credit card prior to the meeting using the Paypal link on our [Calendar webpage](#)

Click below for directions.

[Maggianno's Little Italy Website](#)

The STLE Houston Section's Monthly meeting provides a platform to network, advance your knowledge, learn current trends in tribology, lubrication and related industries, share good food, and much more. Do not forget, there will be door prizes for the lucky winners of the day. Come early and network with your lubricant colleagues.

**STLE Houston Section Calendar of Events (2018 - 2019)**

Please note that Technical Meetings have been moved to **FRIDAYS**

September 14, 2018	Steve Twining of Perkin Elmer will be presenting " <i>Harnessing Solid State Detector Technology in Inductively Coupled Plasma to Determine Unknown Elements in a Lubricant Sample.</i> "	Maggianno's Little Italy
September 18-20, 2018	Houston Section STLE booth at the Texas A&M Turbomachinery & Pump Symposia (TPS)	George R. Brown Convention Center <a href="https://tps.tamu.edu/">https://tps.tamu.edu/</a>
October 12, 2018	Jeff Weikert and Andrea French of Beckman Coulter presented " <i>Liquid Particle Counting</i> "	Maggianno's Little Italy
November 1, 2018	Annual Scholarship Golf Outing	Augusta Pines, Spring, TX
November 9, 2018	Chris Haught of Esco Products presented " <i>Visual Oil Analysis</i> "	Maggianno's Little Italy
December 14, 2018	Tour of Rice University Tribology Lab	Rice University
January 11, 2019	<b>Yan Chen of Texas A&amp;M and Brady Reed, Associate Engineer for McDermott International will present "<i>Nanoparticle Additives in Grease</i>" &amp; "<i>Effects of Nanomaterials on Bacteria</i>"</b>	<b>Maggianno's Little Italy</b>
February 8, 2019	Ricardo Gomes, Evonik, " <i>Construction Equipment Efficiency</i> " or " <i>PPD Challenge in OW-16</i> "	Maggianno's Little Italy
March 6, 2019	2019 Annual Houston STLE Lube School	Sasol Performance Chemicals, Houston, TX

April 12, 2019	STLE President Greg Croce will be presenting about <i>STLE Update</i> and <i>TBD</i>	Maggiano's Little Italy
May 10, 2019	Dr. T. Randall Lee of the University of Houston will present " <i>Lube and Tribology at UH</i> "	Maggiano's Little Italy
May 19 – 23, 2019	STLE 2019 Annual Meeting & Exhibition	Omni Nashville Hotel, Nashville, TN
September TBD, 2019	First Technical Meeting of the new season	TBD