



CACS Technical Seminar & Annual Meeting

Time: 2:00-4:30 pm, Saturday, March 3rd, 2012

Venue: American First National Bank
Community Service Room
12th Floor, 9999 Bellaire Blvd, Houston 77036

Agenda

- 2:00-2:15 pm** *Member Registration and Networking*
- 2:15-2:20 pm** *Welcome Address and Introduction of Speaker
Wei Wang, CACS VP, Education*
- 2:20-3:30pm** *Keynote Speech:*

“Valuable Chemicals from Rice Husk Biomass”
- Presented by:** *Prof. Luyi Sun
Department of Chemistry
Texas State University–San Marcos*
- 3:30-4:15pm** *2011 Annual Review and Awards
Xiuli Wang, CACS President*
- 4:15-4:30pm** *Wrap-up & Picture Time*

Abstract

Rice husks (RHs) have long been considered as a low value biomass due to its tough, woody, abrasive nature, low nutritive properties, great bulk, and high ash content. The global annual production of RHs is about 160 million tons. In some countries, RHs are simply burnt in open field, generating server air pollution, while in many regions RHs must be disposed of at extra cost. RHs contain approximately 85 wt.% lignocellulose and 15 wt.% silica. In this presentation, the comprehensive utilization of RHs is discussed. Lignocellulose was extracted from RHs, which can be subsequently modified for various applications, particularly for energy related applications. Biogenic silica nanoparticles with a diameter of ca. 20-30 nm were synthesized from RHs via controlled pyrolysis. The N₂ sorption characterization results showed that the prepared silica nanoparticles had a specific surface area of ca. 164 m²/g. Under the controlled melting catalyzed by K⁺ cations, such silica nanoparticle clusters can gradually fuse to form crystalline porous silica frameworks with tunable pore size, which may find widespread applications. The implication of the present findings is discussed.

About Prof. Luyi Sun:

Dr. Luyi Sun is an Assistant Professor in Department of Chemistry and Biochemistry & Materials Science and Engineering Program at Texas State University-San Marcos. He received his B.S. degree in Polymer Chemical Engineering from South China University of Technology in 1998. After that, he conducted two years of graduate research under the guidance of Prof. Kecheng Gong. In 2004, mentored by Prof. Joseph S. Thrasher, he obtained his Ph.D. degree in chemistry at The University of Alabama. Following that, he did two years of postdoctoral research at Texas A&M University under the supervision of Profs. Abraham Clearfield and Hung-Jue Sue. From 2006 to 2009, he was a Senior Research Engineer at TOTAL Petrochemicals USA, Inc., with a job focus on products development in polyolefins before returning to academia. Dr. Sun's current research focuses on design and synthesis of nano-structured multifunctional materials for various applications. Dr. Sun has published more than forty (40) peer-reviewed journal articles and two (2) book chapters. He is credited for twenty five (25) patents/patent applications.