

## Comprehensive utilization of rice husks

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The annual global production of rice husks (RHs) is ca. 170 million tons. The current application of RHs has been very limited, mainly owing to their tough, woody, abrasive nature, low nutritive properties, great bulk, and high ash content. Therefore, RHs are widely considered as a bio-waste. RHs are mainly composed of lignocellulose (ca. 85 wt %) and hydrated silica (ca. 15 wt %). An approach for comprehensive utilization of RHs has been developed to prepare lignocellulose and silica nanoparticles from this biowaste. Majority of the lignocellulose was firstly extracted from RHs by dissolving in ionic liquids (ILs). The dissolved lignocellulose was subsequently separated and can be used as a starting material for fabric products, biofuel, etc. The remaining RH residues after extraction that contain a high concentration of hydrated silica were thermally treated to synthesize silica nanoparticles with a high purity and surface area. The implication of the present findings is discussed.

### Biography

Luyi Sun received his Ph.D. from The University of Alabama in 2004 and conducted his postdoctoral studies at Texas A&M University. In 2006, Dr. Sun joined TOTAL Petrochemicals USA, Inc. as a senior research engineer. In 2009, Dr. Sun moved to Texas State University. Dr. Sun has authored over 50 papers in peer-reviewed journals, two book chapters, and delivered over 60 talks at national/international conferences. He is credited for 25 US/International Patents or Patent Applications. Dr. Sun currently serves as an editorial board member of *Journal of Plastic Film and Sheeting* and *Dataset Papers in Materials Science*.

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