

## **Role of silica template in the preparation of sulfonated mesoporous carbon catalysts**

### **Abstract**

Mesoporous carbon catalysts have received considerable interest in the scientific community because of their tunable porosity, hydrophobic surface, and ease of functionalization with active groups such as  $-\text{SO}(3)\text{H}$ . The formation of silica templates is a typical method to prepare a mesoporous carbon, but little is understood on its role for effective sulfonation. In this study, silica templates were used to prepare mesoporous sugar char using the confined activation process. The char was functionalized with  $-\text{SO}(3)\text{H}$  groups before or after removing the silica templates. The roles of the silica templates were evaluated based on the physicochemical properties of the catalysts. The results showed that silica templates provided support to the internal porosity, but prevented the  $-\text{SO}(3)\text{H}$  groups from effectively reaching the internal surface. The esterification of oleic acid showed that the reactivity of the carbon-based catalysts is dependent on the total acidity, but independent of the surface area. These findings show that carbon-based catalysts are suitable for esterification which is useful for biodiesel production. (C) 2010 Elsevier B.V. All rights reserved.