

# Shrimp Shell Catalyst for Biodiesel Production

Linguo Yang<sup>a</sup>, Aiqing Zhang<sup>b</sup>, Xinsheng Zheng<sup>a\*</sup>

<sup>a</sup>Department of Chemistry, college of science, Hua Zhong Agriculture University, Wuhan, China  
430070

<sup>b</sup>Key Laboratory of Catalysis and Materials Science of the State Ethnic Affairs Commission & Ministry of Education, HuBei Province South-Central University for Nationalities, Wuhan, China 430074

\* Corresponding author. Tel: +86-27-87281187; Fax: +86-27-87282133

E-mail address: [xszheng@mail.hzau.edu.cn](mailto:xszheng@mail.hzau.edu.cn) (X. Zheng).

## Supporting Information

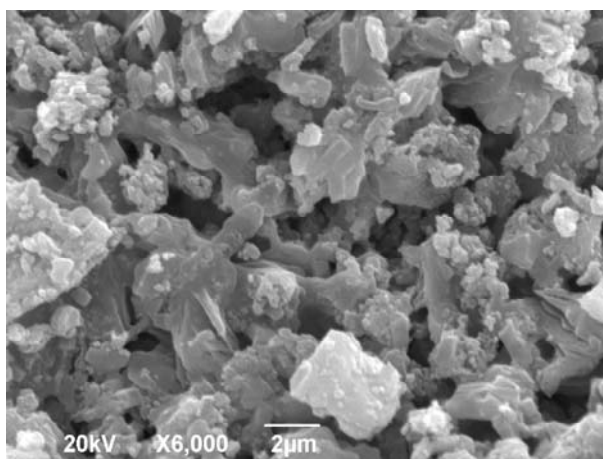
The production of diesel from vegetable oil calls for an efficient solid catalyst to make the process fully ecologically friendly.

Toda et al. (Nature, Doi: 10.1038/438178a) reported that a new class of sulfonated carbons derived through incomplete carbonization of saccharides has relatively high catalytic performance for biodiesel production and the process was environmentally friendly.

Considering that the main component of shrimp shell chitin has the similar structure to saccharides, shrimp shell was applied as raw material to prepare shrimp shell catalyst for biodiesel production. In this study, we have devised a novel tri-step synthetic strategy to prepare shrimp shell catalyst. Shrimp shell was firstly incompletely carbonized, loading KF on the resultant and followed by activation.

As seen from Figure 4b, there were several white particles on the surface of shrimp shell catalyst, which were likely to be active sites of shrimp shell catalyst. The shrimp shell catalyst for the transesterification of rapeseed oil with methanol exhibited interesting base catalytic properties,

relatively high catalytic activity and good thermal and chemical stability. This finding provides opportunities for obtaining novel environment-friendly catalyst for the biodiesel production.



**Figure 4b.** SEM image of shrimp shell catalyst prepared at the optimum preparation conditions

#### References:

- (1) Toda, M.; Takagaki, A.; Okamura, M.; Kondo, J. N.; Hayashi, S.; Domen, K.; Hara, M. *Nature*. 2005, 438, 178.