Electrodeposition of a Zn-MoS₂ Composite Film for the Catalytic Transesterification of Soybean Oil to Biodiesel

Zhenxu Huang^{1,*}, Haijie Sun¹, Hairong Gao¹, Xianru Pei¹ and Shiqian Wei^{2,*}

¹ College of Chemistry and Chemical Engineering, Zhengzhou Normal University, No.6 Yingcai Rd, Zhengzhou, Henan, 450040 P.R. China

² Journal Editorial Office, Xuchang University, No.88 Bayi Rd, Xuchang, Henan, 461002 P.R. China

*E-mail: zhenxuhuang@foxmail.com

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This study explored an efficient catalyst for the production of biodiesel. Zinc sulfate was electrodeposited in a chloride bath containing uniformly dispersed MoS₂ nanoparticles to obtain a Zn-MoS₂ composite catalyst. Cyclic voltammetry (CV) and linear polarization were employed to investigate the Zn-MoS₂ catalyst deposition process. The effects of the catalyst stability, catalyst loading, reaction time and molar ratio of methanol to oil were studied. The optimized catalytic activity was obtained at 10% Zn-MoS₂ catalyst loading. The Zn-MoS₂ catalyst could be easily recovered and reused without exhibiting apparent activity loss.

Keywords: Catalyst; MoS₂; Zinc; Soybean; Biodiesel; Electrodeposition

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