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Superior Activity of CeO₂ Modified V₂O₅/AC Catalyst for Mercury Removal at Low Temperature

Youcai Zhu^{a,b}, Xiaojin Han^{b,*}, Zhanggen Huang^b, Yaqin Hou^{b,c}, Yaoping Guo^{b,c},
Minghong Wu^{a,*}

^a School of Environmental and Chemical Engineering, Shanghai University, Shanghai
200444, PR China

^b State Key Laboratory of Coal Conversion, Institute of Coal Chemistry, Chinese
Academy of Sciences, Taiyuan Shanxi, 030001, PR China

^c University of Chinese Academy of Sciences, Beijing 100049, PR China

Abstract

CeO₂ modified V₂O₅/AC catalysts (V-Ce/AC) were synthesized by an ultrasound-assisted impregnation method, and were employed to remove elemental mercury (Hg⁰) from simulated coal combustion flue gas at low temperature (100-200 °C). The effects of several operation conditions, including the loading of CeO₂, reaction temperature, the role of O₂ and stability of the catalysts were all investigated, respectively. The results showed that 1V-8Ce/AC catalysts had the highest catalytic activity with 98.3 % Hg⁰ removal efficiency at 150°C. There was synergistic effect on Hg⁰ oxidation when V₂O₅ and CeO₂ combined. Characterization

* Corresponding authors. Tel.: +86-351-4048310
E-mail: hanxj@sxicc.ac.cn (X. Han); mhwu@shu.edu.cn (M. Wu)

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