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**Enhanced thermal decomposition properties of ammonium perchlorate through
addition of 3DOM core-shell Fe₂O₃/Co₃O₄ composite**

Jiixin Wang^a, Wenchao Zhang^{a,*}, Zilong Zheng^a, Yu Gao^a, Kefeng Ma^b, Jiahai Ye^a,

Yang Yang^b

^aSchool of Chemical Engineering, Nanjing University of Science and Technology,
Nanjing, 210094, China

^bSchool of Environmental and Biological Engineering, Nanjing University of Science
and Technology, Nanjing, 210094, China

*Corresponding author, Tel: +(86)-025-84315515 Fax: +(86)-025-84315857

Email address: zhangwenchao@njust.edu.cn (W. Zhang)

Abstract

In this study, the three-dimensional ordered macroporous(3DOM) structure is applied to the preparation of the core-shell structure metal matrix composites. 3DOM Fe₂O₃, which was coated with different molar ratios of Co₃O₄, was successfully synthesized by inverting PS spheres colloidal crystal template and sol-gel methods, and subsequently characterized by scanning electron microscopy (SEM), transmission electron microscopy (TEM), N₂ absorption-desorption isotherms, X-ray diffraction (XRD). The catalytic activities of 3DOM Fe₂O₃/xCo₃O₄ core-shell composites, 3DOM Fe₂O₃, bulk Fe₂O₃ and bulk Fe₂O₃/Co₃O₄ on the thermal decomposition of ammonium perchlorate(AP) were investigated by differential scanning calorimeter (DSC). The results indicated that all products showed excellent catalytic activity. Among the samples investigated here, the 3DOM Fe₂O₃/0.70Co₃O₄ exhibited the best

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