

Comparison of Mercury Removal Efficiency from a Simulated Exhaust Gas by Several Types of TiO₂ powder under Various Light Sources

이용규, 이태규^{1,*}, 김중현¹

Yonsei Center for Clean Technology; ¹연세대학교 화학공학과
(teddy.lee@yonsei.ac.kr*)

The techniques for Hg emission control usually involve the use of adsorbents. Among those adsorbents, activated carbon is currently being most widely used. However, the use of activated carbon is limited because of its high cost, poor capacity, low applicable temperature range, and its slow adsorption and regeneration rates. For that reason, use of TiO₂ instead of activated carbon has been recently proposed for effective mercury emission control.

In this study, the removal efficiency of vapor-phase elemental mercury by TiO₂ irradiated using various light sources was investigated. The contacting surface area between mercury and adsorbents was increased by packing the adsorption bed with mixture of TiO₂ and glass beads. A reactor was specially designed to increase the photocatalyst's exposure to the light source. The results show more than 99% mercury removal efficiency for most of the light sources tested and close to 99% even under the solar light.