

Adsorptive desulfurization in fuel gas using modified activated carbon

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Desulfurization of the fuel gas before introduction to reforming processes is strongly essential for residential applications of fuel cells. In this research, the removal of odorants such as tert-butylmercaptan (TBM) and tetrahydrothiophene (THT) from fuel gas by use of activated carbon was studied. Activated carbon modified by several treatment methods such as oxidation (O-AC) or alkaline metal impregnation (M-AC) were used in the adsorption process at ambient conditions. The effects of metal loading on adsorption capacity for TBM and THT were also investigated. The derived adsorbents perform the adsorption capacity and selectivity for odorants better than original activated carbon. The adsorption capacity for THT on O-AC (1.93mmol/g) is much higher than that for TBM (0.52 mmol/g), and O-AC is selective with THT. In contrast, M-AC showed as a TBM-selective adsorbent.