Improvement of volatile organic compounds adsorption capacity by sol-gel coating on commercial adsorbents

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Commercial porous materials (i.e. Aluminosilicate, and Activated alumina) have been widely used as adsorbents or catalysts/catalyst supports, because some of them have high surface area, high thermal and chemical stability. Commercial aluminosilicate can be used as adsorbents in adsorption of VOCs, but they indicated low adsorption capacity. Our previous study showed that mesoporous SiO_2/γ-Al_2O_3 composite prepared by sol-gel and spray pyrolysis indicated improved VOCs adsorption capacity. In this study, we designed sol-gel coating on commercial aluminosilicate for improving VOCs adsorption capacity. The Sol-gel process has advantages of coating easily on substrates. Also, mass production of sol-gel coated adsorbents is possible with this method. In order to control specific surface area and pore structures of coating layer, CTAB was added into the mixed sol as a template. The sol-gel coated adsorbents were analyzed by BET, FE-SEM and Breakthrough experimental.