

## Development Regenerable MgO Based Sorbents Promoted with Cerium and Iron Oxide for SO<sub>x</sub> Removal

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SO<sub>x</sub> can be formed by oxidation of sulfur in fossil fuel and emitted from the industrial processes such as a catalyst regeneration unit of RFCC. In this study, the MgO-based sorbents promoted with Ce and Fe were tested for the removal of SO<sub>x</sub> and their abilities of SO<sub>x</sub> absorption as well as regeneration were investigated in a Fixed-bed under RFCC conditions (sulfation in the presence of low concentration of SO<sub>x</sub> at 700°C, regeneration in the presence of H<sub>2</sub> at 530°C). Ce played an important role in the oxidation of SO<sub>2</sub> into SO<sub>3</sub>. The other promoter Fe improved the regeneration property of the sorbent. The sorbent prepared by impregnation of Ce to the MgCO<sub>3</sub> and then it was promoted with Fe by gel-mixing method. Calcination at 750°C condition transformed MgCO<sub>3</sub> into MgO phase. It was found that surface area and sulfur removal capacity larger than those of the sorbent promoted for commercially available MgO. It showed the high sulfur removing capacity (SO<sub>2</sub> uptake efficiency :97%) and excellent regeneration property. Characterization of sorbents promoted with Ce and Fe were discussed by the results of BET, XRD, FT-IR.