CO_2 absorption properties of MgO-based sorbents for the pre-combustion process

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Magnesium oxide (MgO)-based sorbents were prepared by the impregnating MgO with potassium carbonate (K_2CO_3). Effects of sorption pressure and promoter on their CO_2 capture capacities were investigated using fixed-bed reactor in the presence of 10 vol.% CO_2 and 10 vol.% H_2O at 200 °C. The CO_2 capture capacities of the MgO-based sorbents increased with increasing sorption pressure. MgO-based sorbent promoted with K_2CO_3 showed much higher CO_2 capture capacity than that of a MgO sorbent without promoter. In this study, we will discuss sorption properties and sorption mechanism of the MgO-based sorbent through XRD and TG/DTG analyses.