

## Development of a regenerable adsorbent using MIL-101(Cr, Mg) for ammonia enrichment process

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The Haber-Bosch process is a conventional ammonia production method, but consumes a lot of energy and emits carbon dioxide. To overcome these drawbacks, research has been conducted to synthesize ammonia electrochemically from water and nitrogen at ambient conditions. However, it has the disadvantage of synthesizing a low concentration of ammonia. Therefore, the development of electrochemical ammonia synthesis requires the development of adsorbent to concentrate ammonia. In this work, bimetallic porous materials had been prepared by doping a varying amount (0.5-2.0 mmol) of Mg<sup>2+</sup> on MIL-101(Cr) using the hydrothermal method. The MIL-101(Cr, Mg)s were characterized by TGA, BET, SEM, EDS mapping, XPS, and NH<sub>3</sub>-TPD. The sample doped with 1.0 mmol Mg showed an initial ammonia adsorption capacity of 1.87 mmol NH<sub>3</sub>/g and an average adsorption capacity of 1.14 mmol NH<sub>3</sub>/g with repetitions of adsorption and desorption.