

## 自己熱補償能を備えた柔軟 PCP/MOF による高スループットガス分離

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High throughput gas separation by flexible PCP/MOF with thermal management capability  
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We have focused on flexible PCP/MOF (gate-type adsorbent), which can suppress the heat generation during CO<sub>2</sub> uptake by endothermic deforming of its framework structure, and clarified its excellent CO<sub>2</sub> separation performance. At the same time, we have proposed a high throughput gas separation system utilizing the characteristics of the gate-type adsorbent, and found that its CO<sub>2</sub> separation efficiency was much higher than that of the conventional system. In other words, we have demonstrated for the first time that the gate-type adsorbent is useful for improving the efficiency and energy saving of CO<sub>2</sub> separation systems, and provided a guideline for the search and development of novel gate-type adsorbents.<sup>1),2)</sup>

*Keywords* : CO<sub>2</sub> separation, gate-type adsorbent

自身が吸熱的に構造変形することで CO<sub>2</sub> を取り込む際の吸着熱の発生を抑えることが可能な柔軟 PCP/MOF (ゲート型吸着剤) に着目し、その優れた CO<sub>2</sub> 分離性能を明らかとした。同時に、このゲート型吸着剤の特性を活かした高速度吸着分離システムを考案し、その CO<sub>2</sub> 分離効率が従来方式と比較して極めて高くなることを見出した。本研究は、ゲート型吸着剤が CO<sub>2</sub> の吸着分離回収システムの高効率化・省エネルギー化に有用であることを初めて明らかとしたものであり、さらに高性能なゲート型吸着剤の探索・開発のための指針となることが期待される。

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