

CO₂ sorption properties of the amine-based solid sorbents using porous silica

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To reduce Carbon dioxide (CO₂), many techniques are being studied. Among the techniques, amine-based solid sorbents are useful method to improve environmental problems such as waste water. In the preparation of the solid sorbents, alumina and silica are used as a support. In the case of amine-based solid sorbents, pore size and volume of the support are very important properties because of amine loading amount and sorption rate. In this study, we investigated pore size effects of the porous silica, which synthesized by template method, on the CO₂ sorption properties of the amine-based solid sorbents using tetraethylenepentamine (TEPA) or polyethyleneimine (PEI) at 50 °C and 1 vol% CO₂ condition. The supports, which have the largest pore size, show the highest CO₂ capture capacity of about 70 mg CO₂/g sorbent.