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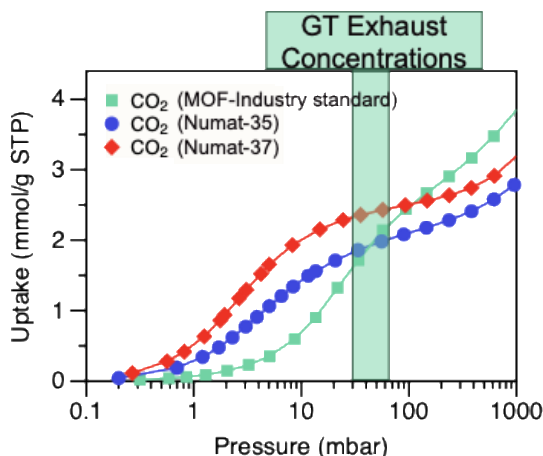
CO₂ capture from natural gas turbine exhaust under high-humidity conditions using MOFs

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Abstract

Carbon capture (CC) from gas turbine (GT) exhausts presents significant challenges. Primary difficulties arise from the limited adsorption capacities of CO₂ through physisorption mechanisms at these low concentrations found in GT exhaust (typically ranging between 3-5 mol%). Moreover, complications introduced by competitive water adsorption in environments with high humidities further stifle CO₂ working capacities. This study focuses on a specific family of metal-organic frameworks (MOFs) that effectively capture CO₂ from feed streams containing 4 mol% CO₂, even under high-humidity conditions (80% RH). Utilizing a straightforward vacuum temperature swing adsorption (VTSA) method, the process achieves targeted outcomes by attaining product streams with purities of 95% and recovery rates of 90% in a highly efficient single-pass operation.



Keywords: MOF, carbon capture, high humidity, vacuum temperature swing adsorption, Type your keywords here, separated by semicolons ; minimum 1 page, maximum 4 pages including diagrams and references.

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