

Abstract Submitted
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CO₂ Adsorption on ZIF-8 ALDO MIGONE, BRICE RUSSELL, Southern Illinois University Carbondale — We present the results of an adsorption isotherm study of CO₂ on the metal-organic framework ZIF-8. This material undergoes a structural transition (“gate-opening”) as a function of increasing pressure and sorbent loading for sorbates. Gate-opening manifests itself in the isotherm data as a quasi-vertical substep, corresponding to an increase in the amount that can adsorb in the ZIF-8. We measured ten CO₂ isotherms from 133 K to 227 K. In this range, we did not find in any of the isotherms the characteristic substep indicative of the gate-opening. It is possible that the temperature range over which this transition would manifest in the data simply has not been explored in our measurements. The adsorption isotherm data was used to determine the isosteric heat of adsorption of CO₂ on this sorbent as a function of sorbent loading. We have studied the adsorption kinetics for this system, i.e., how the equilibration times for adsorption change as a function of sorbent loading. Trends in the isosteric heat, and kinetics of adsorption data will be discussed.

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