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**$O_2$ Adsorption on ZIF-8: Temperature Dependence of the Gate-Opening Transition** ALDO MIGONE, BRICE RUSSELL, Department of Physics, Southern Illinois University, Carbondale IL 62901, JHONNY VILLAROEL, KARIM SAPAG, Instituto de Fisica Aplicada, CONICET-Universidad Nacional de San Luis, San Luis Argentina — We present the results of an adsorption isotherm study of $O_2$ on the metal-organic framework ZIF-8. This material undergoes a structural transition ("gate-opening") as a function of increasing pressure and sorbent loading which manifests itself in the isotherm data as a quasi-vertical substep. We used this feature to explore the temperature dependence of the structural transition. We have found that the transition occurs below the saturated vapor pressure only for temperatures below 93.93 K. The adsorption isotherm data measured at various temperatures was also used to determine the isosteric heat of adsorption of $O_2$ on this sorbent for different sorbent loading values. We have studied the adsorption kinetics for this system, i.e., how the equilibration times for adsorption change as a function of sorbent loading. The sorbent loading dependence of the equilibration time is non-monotonic. This unusual characteristic appears to be related to the structural transition present in the sorbent.

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