

Abstract Submitted
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Supra-molecular networks for CO₂ capture¹ JERZY SADOWSKI, JOHN KESTELL, Brookhaven National Laboratory — Utilizing capabilities of low-energy electron microscopy (LEEM) for non-destructive interrogation of the real-time molecular self-assembly, we have investigated supramolecular systems based on carboxylic acid-metal complexes, such as trimesic and mellitic acid, doped with transition metals. Such 2D networks can act as host systems for transition-metal phthalocyanines (MPc; M = Fe, Ti, Sc). The electrostatic interactions of CO₂ molecules with transition metal ions can be tuned by controlling the type of TM ion and the size of the pore in the host network. We further applied infrared reflection-absorption spectroscopy (IRRAS) to determine of the molecular orientation of the functional groups and the whole molecule in the 2D monolayers of carboxylic acid. The kinetics and mechanism of the CO₂ adsorption/desorption on the 2D molecular network, with and without the TM ion doping, have been also investigated.

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