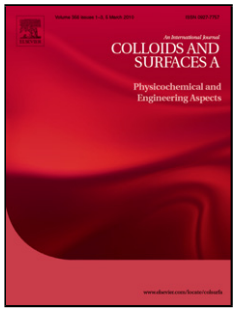

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Amino Acid Modified Montmorillonite Clays as Sustainable Materials for Carbon Dioxide Adsorption and Separation

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Graphical abstract

Intercalation of natural clay with amino acids is an environmentally friendly and sustainable procedure to prepare low cost porous materials with surface amino groups, that promote the adsorption of carbon dioxide and are highly selective in the carbon dioxide / methane separation

Abstract: For carbon dioxide sequestration purposes or for fuel production from biogas, CO_2 needs to be separated from other gases in large scale processes and “green” and sustainable methodologies for this are not currently in use. Adsorption can be a viable alternative and one way of promoting the CO_2 adsorption, and hence the selectivity of the adsorbent, is surface modification with amine groups. In the present work, we used a sustainable methodology to prepare amine modified clays by the insertion of amino acids in a raw clay. The adsorbed amounts of carbon dioxide in these low-cost materials reached 0.8