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CO_2 sorption over B-ZSM-5 templated by a new organic template: Kinetic study

B. Bensafi [1,*], N. Chouat [1], M. Lafjah [1], F. Djafri [1]

[1] Laboratoire de chimie des matériaux, Département de Chimie, Université d'Oran 1 Ahmed Ben Bella, El M'naouer BP: 1524, Oran, Algérie.

* Corresponding author: bensafibb@hotmail.com; Tel: +213 782 185 160.

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ABSTRACT/RESUME

Abstract: *ZSM-5 zeolite has a great importance in hazardous substances adsorption and catalytic process. In this study, a borosilicate ZSM-5 zeolite was carried out using N,N-dimethylaniline as a novel structure-directing agent. The synthetized material was characterized by X-ray diffraction, thermal analysis (TG/dTG), N_2 physical adsorption, and Fourier transform infrared spectroscopy. CO_2 adsorption at different temperatures was evaluated by a volumetric method, and both Langmuir and Freundlich adsorption models were applied. According to the experimental results, B-ZSM-5 zeolite has a favorable adsorption behavior at low temperatures. Different kinetic models were used to describe the adsorption of CO_2 over B-ZSM-5. A good agreement with experimental data was found for pseudo-n order.*