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رسائل الماجستير الخاصة بالهيئة المعاونة
بقسم الهندسة الكيميائية

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Preparation and Characterization of Nano-Materials from Natural Resources for Water Treatment"

The major aim of the work presented in this thesis is to investigate the different preparation parameters affecting the efficiency of synthesized nano-zeolites on phenol decontamination process. Montmorillonite natural Egyptian clay was used as raw material for zeolite synthesis using sol-gel technique that followed by calcination process. The performance of the prepared materials toward phenol decontamination was monitored against the variation of both the sol-gel at alkaline conditions and calcination parameters. The most proper prepared nano-zeolite produced after the alkaline treatment of clay with 4 molar NaOH after heating for 4hours at 60°C. After drying the produced powder material, it was calcinated at 500°C for 1hour. This optimum prepared nano-zeolite sample recorded 62% phenol decontamination after 2 hours. The crystalline, morphological and chemical structure of the most proper prepared nano-zeolite was determined using XRD, SEM and FTIR respectively. The phenol decontamination profile of the synthetized nano-zeolite was examined using batch technique. The various processing parameters affecting phenol removal such as contact time, phenol concentration, zeolite amount and solution pH and temperature were optimized. The prepared nano-zeolite achieves 90% phenol decontamination for 10ppm solution using 2gm from prepared material at solution pH of 3 and after 2hours.