



**Characterization of Jordanian Raw Bentonite and Surfactant-Modified Bentonite and their Use in the Removal of Selected Organic Pollutants from Aqueous Solutions**

**Samar A. Ahmad<sup>1</sup>, Salem M. Musleh<sup>1\*</sup> and Nabil M. Eldurini<sup>2</sup>**

1. Chemistry Department, Faculty of Science, Al-Balqa Applied University Al Salt, 19117-**JORDAN**

2. Chemistry Department, Faculty of Arts and Science, Petra University, Amman, 11196 – **JORDAN**

Email: [smusleh@lycos.com](mailto:smusleh@lycos.com)

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**ABSTRACT**

*Adsorption of aniline, N-methyl aniline and N, N – dimethyl aniline from aqueous solution was investigated using raw and modified Jordanian bentonite. The modification was done using hexadecyltrimethylammomium chloride (HDTMA-Cl), C<sub>19</sub>H<sub>42</sub>N Cl. The raw and the modified bentonite (organobentonite) were characterized using X-Ray fluorescence spectroscopy (XRF), X-Ray diffraction (XRD), Fourier Transform Infrared Spectroscopy (FTIR), UV/VIS spectroscopy and cation exchange capacity (CEC) methods. The adsorption studies were performed in batch system, and the effect of various experimental parameters such as solution PH, initial concentration of pollutants were evaluated upon the aniline and its derivatives adsorption onto raw and organobentonite. It is found that removal of aniline from aqueous solution using raw bentonite ranges from 29.5% to 40.6% while for organobentonite ranges from 60.2% to 88.0%, for N-methylaniline from 19.0% increased to 69.5% and for N,N-dimethylaniline the adsorption increase from 19.4% to 96.4%. Maximum achievement was found to be in the range PH 3.1 to 4.2 for the organobentonite samples. The parameters indicated that organobentonite was feasible and has a significant potential as an adsorbent for removal of aniline and its derivatives from aqueous solutions.*

**Keywords:** Raw Bentonite; Cationic Surfactant; Organic Pollutants; Surfactant-Modified Bentonite.

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