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## ADSORPTION OF 2,4-DINITROPHENOL AND 2,6-DINITROPHENOL ONTO ORGANOCCLAYS AND INORGANIC-ORGANIC PILLARED CLAYS

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### Abstract

The adsorption of two substituted nitrophenols, 2,4-dinitrophenol and 2,6-dinitrophenol on smectite clay modified by intercalation of hexadecylpyridinium bromide (O-Sa01) or hexadecylpyridinium bromide and complex hydroxy-aluminum (IO-Sa01) were studied. The adsorption experiments were conducted in batch mode. The results obtained show that adsorption increases with the initial concentration of the nitrophenols and equilibrium is reached within a short period of time (20 min). The maximum capacity uptake from waste water was 28.07 and 28.58 mg g<sup>-1</sup> for O-Sa01 and IO-Sa01 respectively for an initial concentration of 18.40 mg L<sup>-1</sup> of 2,4-dinitrophenol, and 24.65 and 26.62 mg g<sup>-1</sup> of 2,6-dinitrophenol for O-Sa01 and IO-Sa01, respectively, for the same initial concentration as in the case of 2,4-dinitrophenol. Separation factor RL indicates that the adsorption of the nitrophenol compounds studied is more favorable on IO-Sa01. Adsorption was modeled by the equations of Langmuir, Freundlich, and Temkin. Kinetic data were described by the pseudo-first order and pseudo-second order equations. Based on the linear correlation coefficient (>0.97), the Langmuir model better represented the data.

*Key words:* adsorption, isotherm, modified clays, nitrophenols

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