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Synthesis of activated carbon from aguaje seeds (*Mauritia flexuosa*) for the adsorption of the N,N-dimethylamine

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Abstract

Activated carbons (ACs) were prepared from aguaje seeds at different impregnation ratios of (Formula presented.)/precursor equivalent to 0.5, 0.75, 1.0 and 1.5, for the adsorption of N,N-dimethylamine (DMA). The samples were characterized by (Formula presented.)-sorption ((Formula presented.)), X-ray diffraction, infrared spectroscopy (FTIR), Boehm titration, scanning electron microscopy and energy-dispersive X-ray spectroscopy. The samples were successfully activated to obtain highly microporous surface (>95 %) with high total BET surface area ((Formula presented.)695 (Formula presented.)). Common acid functional groups were determined by the Boehm titration and FTIR. The kinetic data revealed that the results were better adjusted to pseudo-second order and Elovich models. To predict the adsorption process, different isotherm models were tested. The best fit isotherm model for AC-0.5 and AC-0.75 samples was the Temkin isotherm model. Meanwhile, the Langmuir isotherm was the best fit model for AC-1.0 and AC-1.5 samples. Moreover, it was found that the adsorption of DMA was highly influenced by the surface acidity and the microporosity of the carbons.

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