

Surface modification of coals obtained from Kraft lignin

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Biomass is a renewable resource whose importance is growing every day, given the environmental and possible oil crisis concerns. Thus, the interest in optimizing its use is a current challenge. In this context, lignin is a prominent biomass, due to its wide availability in paper and pulp companies¹. This macromolecule is characterized by complex chemical structure, valuable physicochemical properties and varied chemical composition^{2,3}. The objective of this work is to use a Kraft lignin sample as a precursor material in coal production, by heat treatment (HTs) of carbonization, with posterior modification of the surface areas of obtained coals through chemical (acid attack) and physical (microwave plasma) processes. The characterization of the resulting carbon material was obtained through field scanning electron microscopy (using a TESCAN Oxford Instrument X-man) and surface area according to the theory of Brunauer, Emmett and Teller (using a Quantachrome, Model NovaWin). Differences were observed in the morphologies of the samples in relation to the surface treatment used. The acid attack increased the surface area up to 40% (403 m²/g) in relation to the initial area (287 m²/g). Besides that, the plasma treatments conferred the greatest surface area increases (up to 468 m²/g or up to 63%). From the results obtained is found that the production of activated carbon from lignin is feasible.

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