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[Mechanism of phenol adsorption onto electro-activated carbon granules.](#)
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ABSTRACT:

The main purpose of this paper is to determine the mechanisms which govern the adsorption of the phenol onto electro-activated carbon granules. This new activation technique allowed an increase of the performance of the adsorbent. Two models were utilised to understand the improvement in the performance of electroactivated carbon granules. The first, a simple external resistance model based on film resistance, gave acceptable predictions, with an error of less than 15%, between the theoretical results and experimental data independent of the activation potential and phenol initial concentration. The second linear model, based on diffusion phenomena, was more representative in describing the experiment than the first model. It was observed that the electro-activation method did not change the mechanism which governs phenol adsorption onto granular carbon. Indeed, the same mathematical model based on diffusion phenomena made it possible to predict with a very low error (less than 5%) the experimental data obtained for the favourable activation potential, without activation potential and with an unfavourable activation potential. The electro-activation technique makes it possible to increase the number of active sites that improve the performance of the electro-activated granular carbon compared with conventional granular activated carbon.