

Activation of Biomass-Derived Charcoal Sorbents and Its Effect on Metal Sorption

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Acid activation is known to alter the variability of surface properties found on pyrogenic organic matter¹. However, it has mostly been described qualitatively. This poster presentation will quantitatively explore these properties and its link to heavy metal sorption. Specifically, this presentation will compare the surface heterogeneity (ϕ_{surf})² and adsorption kinetics of Pb²⁺ of activated charcoal sorbents to those of unactivated charcoal sorbents.

Results from Pb²⁺ sorption shows that when activated and heat-treated at 650°C, charcoal sorbents adsorbed about 85% more than unactivated charcoal sorbents. This indicates the possibility of either more pore sites or surface functional groups available to adsorbed lead. This presentation will further discuss these results, methodology, and modeling applications.

- (1) Güzel, Saygili, Saygili, Koyuncu, Yilmaz (2017), *Journal of Cleaner Production* 144 260-265.
- (2) Harvey, Leonce & Herbert (2018), *Environmental Science & Technology* 52(11), 6167-6176.