

# **Frontiers in Pharmaceutical, Material, and Environmental Sciences: Innovative Approaches and Applications**

## **Editors**

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## Chapter – 9

### Removal of Orange G and Heavy Metals using Chitosan-coated Bamboo Biochar

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#### Abstract

Bamboo is widely used as scaffolding in construction and building projects. However, over 50,000 tons of bamboo scaffolding waste are disposed of as landfill waste each year. Nevertheless, these wastes can be used as raw materials for the production of a range of high-value-added activated carbons. The bamboo cane can be heated (charred) at a high temperature in the presence of selected activation chemicals to produce activated carbons for various applications e.g. adsorbents, and catalysts. The present investigation was intended for the absorption of Heavy Metals i.e. Pb and Cu and Dyes Orange G with Bamboo activated charcoal. The bamboo charcoal was activated using  $\text{ZnCl}_2$  and was coated with Chitosan. The study and graphical analysis proved that for Dyes on increasing the dose of 1:1 Beads adsorbent the adsorption capacity significantly increases whereas for 1:2 Powder adsorbent, the adsorption capacity was independent of dosage as a slight adsorption increase was visible. For the adsorption of copper metal both the adsorbent materials showed the same adsorption capacity and lead showed the best result for increased contact time of 1:2 powder.

**Keywords:** Bamboo, dyes, adsorption, catalysis, chitosan

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