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**AREA: Synthesis and characterization of catalysts and adsorbents**

## **Porous carbon cartridges obtained from mango seeds and avocado pits applied as adsorbents for Cd<sup>2+</sup>, Cu<sup>2+</sup>, and Pb<sup>2+</sup> ions**

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### **Abstract**

The high concentration of heavy metals in water bodies is dangerous for the environment, as it is intensely toxic to organisms, making its removal of great importance. Several techniques for removing heavy metal cations from the environment have been developed, among them, adsorption appears as a great option due to its low cost. For this, solid adsorbent materials with high adsorption capacity are used. Recently, materials based on porous carbons have been used as bioadsorbents once compared to conventional adsorbents, such as silicas, these materials have a high surface area, high adsorption capacity, with the additional property of being obtained from byproducts of agribusiness. In this context, the objective of this work is to develop cartridges based on porous carbons using different carbon sources for the adsorption of metallic ions in an aqueous medium. The methodology is based on lyophilization, followed by carbonization of two materials of vegetable origin obtained from the Tommy atkins mango kernel and the Persea americana avocado seed, which were subjected to oxidation procedure. The characterization of the cartridges was carried out by a series of techniques. Spectroscopy in the infrared region helped to prove that the two carbon sources, despite the different origins, have similar composition. Scanning electron microscopy for both samples confirmed the presence of defined and well-organized porous structures, and the thermogravimetric analysis showed a similar resistance between the lyophilized samples and the carbonized and oxidized samples of both samples. Furthermore, the adsorptive potential of both was evaluated through batch adsorption of the metallic ions Cu<sup>2+</sup>, Cd<sup>2+</sup> and Pb<sup>2+</sup>. The results indicate the success in the preparation of porous carbons with homogeneous pore size distribution, high thermal stability and with promising adsorption values for the materials studied. Thus, the results obtained demonstrate the practical feasibility for the adsorption of toxic metals.

*Keywords: Porous carbons, Adsorption, Metal ions, Tommy atkins mango, Persea americana avocado.*

### **References**

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