



3rd International Conference on Natural Fibres: Advanced Materials for a Greener World, ICNF
2017, 21-23 June 2017, Braga, Portugal

VALORISATION OF NATURAL FIBRES FROM AFRICAN BAOBAB WASTES BY THE PRODUCTION OF ACTIVATED CARBONS FOR ADSORPTION OF DIURON

Emilio Tchikuala^{a,b,*}, Paulo Mourão^a, João Nabais^a

^aCentro de Química de Évora, Instituto de Investigação e Formação Avançada, Departamento de Química, Escola de Ciências e Tecnologia,
Universidade de Évora, Rua Romão Ramalho n°59, 7000-671 Évora, Portugal

^bDepartamento de Ciências Exactas, Universidade Katyavala Bwila, Rua José Falcão n°67, 1725 Benguela, Angola

Abstract

In this work we report the use of a natural fibrous biomass, the African Baobab, as precursor to produce activated carbons tailored for the removal of a pollutant frequently found in water streams, the herbicide Diuron. The precursors used were Baobab wastes, namely bark, wood and seeds, collected in Angola. The activated carbons produced by physical activation with carbon dioxide showed an interesting porosity with apparent surface area and pore volume, up to $2130\text{m}^2\text{g}^{-1}$ and $0.99\text{cm}^3\text{g}^{-1}$, respectively. All the activated adsorbents are of microporous nature, with mean pore width between 0.69 and 1.94nm. Selected samples were tested for the adsorption of Diuron from liquid-phase. The maximum adsorption capacity reached 400mgg^{-1} for sample BS-62. This work shows the suitability of using Baobab wastes to produce activated carbons, which can be considered a new route to the valorization of its wastes, with good properties for the adsorption of Diuron.

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Peer-review under responsibility of the scientific committee of the 3rd International Conference on Natural Fibres: Advanced Materials for a Greener World.

Keywords: African Baobab; Fibrous biomass; Activated carbon; Adsorption; Diuron;

1. Introduction

The scientific name for Baobab is *Adansonia Digitata*, as a tribute to the French Explorer and botanist, Michel Adanson (1727-1806), who observed a specimen in 1749 on the island of Sor, Senegal. The African Baobab can reach 30m high and 7m diameter with a lifespan of several hundred years. This tree is also known as the African Tree of Life because during the rainy season it absorbs and stores water, up to 7m^3 , in the trunk with the production of a rich fruit in the dry season. The fruits, flowers, leaves, shoots, roots of seedlings and even the tree roots are

- Corresponding author. Tel.: +351 266 745 311.
- E-mail address: tchikuala@hotmail.com

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Peer-review under responsibility of the scientific committee of the 3rd International Conference on Natural Fibres: Advanced Materials for a Greener World
10.1016/j.proeng.2017.07.058