

P-16 REMOVAL OF POLLUTANTS BY ACTIVATED CARBONS MADE FROM WOOD PRODUCED IN ANGOLA

Emílio Figueira Tchikuala^{1,2}, Paulo Alexandre Mira Mourão¹, J.M. Valente Nabais¹

¹ Centro de Química de Évora e Departamento de Química, Escola de Ciências e Tecnologia, Universidade de Évora, Rua Romão Ramalho nº59, 7000-671 Évora, Portugal.

² Departamento de Ciências Exatas, Universidade Katyavala Bwila, Rua José Falcão nº67, 1725 Benguela, Angola.
e-mail: tchikuala@hotmail.com

This work reports the production of activated carbons from novel precursors, namely wood produced in Angola (Benguela region), and its application to remove pollutants from aqueous solutions, namely an herbicide with a broad use in agriculture: Diuron (3-(4-dichlorophenyl)-1,1-dimethylurea).

Activated carbons have been used as adsorbents of excellence for many years. Additionally, the potential of the lignocellulosic materials as precursors for the production of activated carbons is also known. The novelty of this work is the use of a novel precursor with the aim of creating added value products that can be used for environmental protection.

The activated carbons were produced by carbonisation under a nitrogen flow and activation with carbon dioxide at different temperatures and times. It was possible to produce materials with a range of porous and surface chemistry characteristics. The characterisation of the precursor and activated carbon samples were done by nitrogen adsorption at 77K, X ray diffraction, elemental analysis, FTIR, point of zero charge and thermal analysis.

We will present the results of the Diuron adsorption from aqueous solutions and we will correlate the results with the materials properties in order to better understand the adsorption mechanism. Based on the results we will also conclude on the best preparation condition to obtain a material tailored for the Diuron adsorption [1].

This work is relevant as the use of pesticides and herbicides are increasingly being used in Angola with the subsequent contamination of soils and water streams, river and lakes. The results of the reported work will help in fighting the negative impact of the contamination using activated carbons made from endogenous materials. This is also interesting from the economical point of view as we aim to create materials with an added value from agricultural residues [2].

Acknowledgements: E.F.T. Tchikuala is thankful to the Centro de Química de Évora, Departamento de Química, and Escola de Ciências e Tecnologia of the University of Evora for hosting his PhD project.

[1] Mourão, P. A. M.; Laginhas, C.; Custódio, F.; Nabais, J. M. V.; Carrott, P. J. M.; Ribeiro Carrott M. M. L.; *Fuel Proc. Tech.* **2011**, 92, 241-246.

[2] Marsh, H.; Rodríguez-Reinoso, F. *Activated Carbon* Elsevier Science & Technology Books, **2006**.