

# OPTIMIZATION OF THE PREPARATION OF ACTIVATED CARBON COMPOSITE BASED ON NATURAL MATERIALS AND PLASTICS: APPLICATION FOR THE TREATMENT OF ORGANIC EFFLUENTS

Boris Youatou Gadjui<sup>a</sup>, Daouda Kouotou<sup>a,b</sup>, Esther Baillon Garcia<sup>b</sup>, Julius Nsami Ndi<sup>a</sup>, Horace Manga Ngomo<sup>a</sup>, Francisco Carrasco Marin<sup>b</sup>

<sup>a</sup>Applied Physical and Analytical Chemistry Laboratory, Department of Inorganic Chemistry, Faculty of Science, University of Yaoundé I, Cameroon

<sup>b</sup>Grupo de Investigación en Materiales de Carbón/Dpto. Química Inorgánica/Universidad de Granada, Granada

Plastics materials are considered as one of the widely used synthetic polymers around the world. The annual production of plastics materials has doubled over the past fifteen years to 245 million tons [1]. Therefore, due to their excessive usage, the plastics wastes in billions tons get accumulate around the world and among the total solid wastes generated in the environment, the plastics wastes topped the list [2]. Under natural conditions, the plastics materials are non-degradable organic matters, thus they are considered as a major environmental problem. Recycling the plastics wastes is an alternative solution to produce new materials and limiting the mountains of trash which accumulate plastics wastes and cause serious threat to environment and wildlife. Therefore, researchers have paid more attention on the development and tailoring of adsorbents for wastewater treatment purpose. The removal of dyes from wastewater is essential in order to keep the environment cleanliness and human health safety. The adsorption technique is promising based on its economical aspect, flexibility, simplicity of design and its ability to remove various pollutants even at low concentration. Activated carbons are considered to be good materials with various applications in environmental protection. In order to increase their adsorption capacities, the activated carbons surface can be modified by reinforcing them to form a composite material. The *Canarium schweinfurthii* (also known as African black fruits) are available in large quantity in Cameroon. They have been successfully transformed into activated carbon [3], but there are no much works as far as our knowledge is concerned which deal with the production of carbon composite materials based on *Canarium schweinfurthii* seeds (CS) combined with plastics wastes. Hence, the aim of this work is to prepare a composite based CS seeds and PET wastes and investigate their adsorption efficiency for the removal of RhB dye, selected as a representative of basic dye model since it is frequently found in industrial wastewater.

---

[1] M.Sharma, A. Dubey and A. Pareek, *CIBTech J. Microbiol*, 3(2), 43-47. (2014).

[2] S. Mehdi, B. Djamel, K. Abdelouahed and I. H. Mohamed, *Energy Procedia*, 119, 163–169, (2017).  
<https://doi.org/10.1016/j.egypro.2017.07.065>.