



“Gheorghe Asachi” Technical University of Iasi, Romania



TREATMENT OF ORGANIC POLLUTED WATER BY SPENT COFFEE GROUNDS IN THE CONTEXT OF INTEGRATED WASTE MANAGEMENT IN ALGERIA

Amira Khemmari¹, Oumessad Ali², Abdelkader Namane^{1*}, Jazia Arrar¹

*¹Ecole Nationale Polytechnique, 10 Avenue Hacen Badi, BP182, Laboratoire des Sciences
et Techniques de l'Environnement, El Harrach Alger 16200, Algeria*

²University Mouloud Mammeri, Tizi-ouzou.15000, Algeria

Abstract

This paper presents the feasibility of phenol removal from aqueous solutions by using microwaves activated spent coffee grounds. The activation of the coffee grounds made it possible to increase with 75% the quantity eliminated compared to the not activated coffee grounds. The results showed that the adsorption process was favourably fitted with the pseudo-second order kinetic model and the isotherm obeys to Langmuir model. The maximum amount of phenol adsorbed (7.35 mg/g) for optimal conditions was determined using an experimental factorial design 2³.

Keywords: adsorption, factorial design, microwaves activation, phenol, spent coffee grounds

Received: June, 2020; Revised final: September, 2020; Accepted: October, 2020; Published in final edited form: June, 2021

* Author to whom all correspondence should be addressed: e-mail: abdelkader.namane@g.enp.edu.dz; Phone: 00213699281573