

Accepted Manuscript

Synthesis of Polyaniline nanoparticles and their application for the removal of Crystal Violet dye by Ultrasonicated adsorption Process Based on Response Surface Methodology

Muhammad Saad, Hajira Tahir, Jawariya Khan, Uzma Hameed, Atika Saud

PII: S1350-4177(16)30219-X

DOI: <http://dx.doi.org/10.1016/j.ultsonch.2016.06.022>

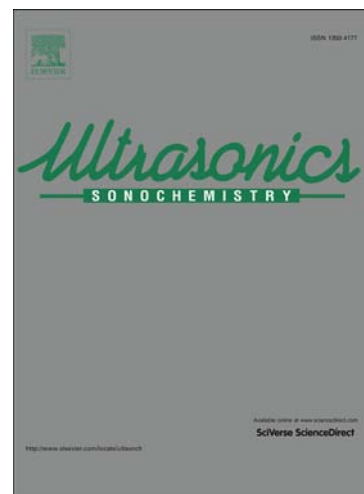
Reference: ULTSON 3279

To appear in: *Ultrasonics Sonochemistry*

Received Date: 31 May 2016

Revised Date: 18 June 2016

Accepted Date: 18 June 2016



Please cite this article as: M. Saad, H. Tahir, J. Khan, U. Hameed, A. Saud, Synthesis of Polyaniline nanoparticles and their application for the removal of Crystal Violet dye by Ultrasonicated adsorption Process Based on Response Surface Methodology, *Ultrasonics Sonochemistry* (2016), doi: <http://dx.doi.org/10.1016/j.ultsonch.2016.06.022>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Synthesis of Polyaniline nanoparticles and their application for the removal of Crystal Violet dye by Ultrasonicated adsorption Process Based on Response Surface Methodology

Muhammad Saad¹, Hajira Tahir*¹, Jawariya Khan², Uzma Hameed², Atika Saud¹
muhammadsaad2010@live.com,
*hajirat@uok.edu.pk
jiya_thestar@hotmail.com
amzu_baig@hotmail.com
atika_saud313@hotmail.com

¹Department of Chemistry, University of Karachi 75270, Pakistan

²Department of Chemistry, Jinnah University for Women, Karachi

ABSTRACT

The present study focuses the synthesis of Polyaniline Nanoparticles (PANP) by rapid mixing polymerization method. They were recognized by FTIR and SEM techniques. Moreover they were utilized for the removal of crystal Violet (CV) dye by ultrasonicated adsorption process. It ensures a quick alternative method compared to other conventional processes, which led to enhancement of mass transfer by ultrasound waves. The effectiveness of the process was confirmed through the effect of certain conditions like sonication time, temperature, adsorbent dosage and CV concentrations. The validity of the process was estimated by various adsorption Isotherms. Kinetics and thermodynamic studies was also conducted to authenticate the process. The optimum operating parameters (OOP) were evaluated by Response Surface Methodology (RSM) based on central composite design (CCD) for the removal of CV dye. Moreover analysis of variances (ANOVA) was employed to estimate the significance of experimental variables. The predicated removal efficiency was found to be 94.29% which prove to be effectiveness of the process.

Keywords: Polyaniline nanoparticles, Ultrasonicated adsorption, Central Composite Design, Response Surface Methodology, ANOVA.

Download English Version:

<https://daneshyari.com/en/article/7703712>

Download Persian Version:

<https://daneshyari.com/article/7703712>

[Daneshyari.com](https://daneshyari.com)