

Accepted Manuscript

Synthesis and characterization of Samarium and Nitrogen doped TiO₂ photocatalysts for photo-degradation of 4-Acetamidophenol in combination with hydrodynamic and acoustic cavitation

Sunil Rajoriya, Swapnil Bargole, Suja George, Virendra Kumar Saharan, Parag R. Gogate, Aniruddha B. Pandit

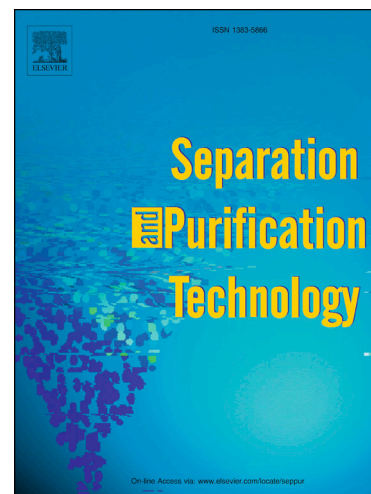
PII: S1383-5866(18)31389-3
DOI: <https://doi.org/10.1016/j.seppur.2018.07.036>
Reference: SEPPUR 14767

To appear in: *Separation and Purification Technology*

Received Date: 23 April 2018
Revised Date: 7 July 2018
Accepted Date: 15 July 2018

Please cite this article as: S. Rajoriya, S. Bargole, S. George, V. Kumar Saharan, P.R. Gogate, A.B. Pandit, Synthesis and characterization of Samarium and Nitrogen doped TiO₂ photocatalysts for photo-degradation of 4-Acetamidophenol in combination with hydrodynamic and acoustic cavitation, *Separation and Purification Technology* (2018), doi: <https://doi.org/10.1016/j.seppur.2018.07.036>

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 and characterization of Samarium and Nitrogen doped TiO₂ photocatalysts for photo-degradation of 4-Acetamidophenol in combination with hydrodynamic and acoustic cavitation

Sunil Rajoriya¹, Swapnil Bargole¹, Suja George¹, Virendra Kumar Saharan^{1*}, Parag R. Gogate², Aniruddha B. Pandit^{2*}

¹Department of Chemical Engineering, MNIT, Jaipur-302017, India

²Chemical Engineering Department, Institute of Chemical Technology, Matunga, Mumbai-400019, India

*** Author to whom correspondence should be addressed.**

ab.pandit@ictmumbai.edu.in; Tel: +91-22-33612012

vksaharan.chem@mnit.ac.in; Tel: +91-141-2713244

Abstract:

In the present work, samarium (Sm) and nitrogen (N) doped TiO₂ photocatalysts have been synthesized using conventional sol-gel process (CSP) and ultrasound assisted sol-gel process (USP). Detailed characterizations of catalysts have been performed using PL, UV-DRS, XPS, XRD, FTIR, FESEM, and EDX analysis. Photocatalytic activity of the catalysts has also been evaluated for the degradation of 4-Acetamidophenol (4-AMP) using different combinations of ultraviolet (UV) irradiation, hydrodynamic cavitation (HC) and ultrasound (US). Initially, the effects of operating parameters i.e. catalyst dosage, solution pH, and 4-AMP initial concentration on the extent of degradation have been investigated. It was observed that degradation of 4-AMP followed first order reaction kinetics and almost 50% degradation with a degradation rate

Download English Version:

<https://daneshyari.com/en/article/7043473>

Download Persian Version:

<https://daneshyari.com/article/7043473>

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