

Accepted Manuscript

Efficient removal of paracetamol using $\text{LaCu}_{1-x}\text{M}_x\text{O}_3$ ($\text{M}=\text{Mn}, \text{Ti}$) perovskites as heterogeneous Fenton-like catalysts

M.R. Carrasco-Díaz, E. Castillejos-López, A. Cerpa-Naranjo, M.L. Rojas-Cervantes

PII: S1385-8947(16)30861-0
DOI: <http://dx.doi.org/10.1016/j.cej.2016.06.054>
Reference: CEJ 15364

To appear in: *Chemical Engineering Journal*

Received Date: 27 January 2016
Revised Date: 8 June 2016
Accepted Date: 9 June 2016

Please cite this article as: M.R. Carrasco-Díaz, E. Castillejos-López, A. Cerpa-Naranjo, M.L. Rojas-Cervantes, Efficient removal of paracetamol using $\text{LaCu}_{1-x}\text{M}_x\text{O}_3$ ($\text{M}=\text{Mn}, \text{Ti}$) perovskites as heterogeneous Fenton-like catalysts, *Chemical Engineering Journal* (2016), doi: <http://dx.doi.org/10.1016/j.cej.2016.06.054>



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.

Efficient removal of paracetamol using $\text{LaCu}_{1-x}\text{M}_x\text{O}_3$ (M=Mn, Ti) perovskites as heterogeneous Fenton-like catalysts

M.R. Carrasco-Díaz^a, E. Castillejos-López^b, A. Cerpa-Naranjo^a and M.L. Rojas-Cervantes^{b*}

^a *Departamento de Ingeniería Industrial, Escuela de Ingeniería, Arquitectura y Diseño, Universidad Europea de Madrid, c/ Tajo s/n, Villaviciosa de Odón 28670 (Madrid), Spain*

^b *Departamento de Química Inorgánica y Química Técnica, Facultad de Ciencias, UNED. Paseo Senda del Rey n° 9, Madrid 28040, Spain*

Abstract

A series of perovskite-like oxides $\text{LaCu}_{1-x}\text{M}_x\text{O}_3$ (M=Mn, Ti; $0.0 \leq x \leq 0.8$) was prepared by amorphous citrate decomposition and characterized by XRD, ICP-OES and XPS techniques. The catalysts were tested in the Fenton-like degradation of paracetamol with H_2O_2 , under mild reaction conditions, 25 °C and nearly neutral pH. Values of decomposition of paracetamol between 80 and 97 % at 300 min were achieved for most of samples. The presence of the $\text{Cu}^{2+}/\text{Cu}^+$ pair at the surface of the catalysts is necessary to carry out the reaction and the catalysts containing higher amount of copper at the surface, resulted to be more active. The leaching of metals was less than 1 %, which discards the contribution of the homogenous Fenton-like reaction and remarks the high stability of the metals into the mixed oxide network. The catalytic activity of $\text{LaCu}_{0.8}\text{Mn}_{0.2}\text{O}_3$ was maintained after three cycles of reaction, which proves the stability and reusability of the catalyst.

Keywords: Fenton-like reaction; paracetamol; copper perovskites;

* Corresponding author. Tel: + 34 1 3987352; fax: + 34 1 398 66 97

E-mail address: mrojas@ccia.uned.es

Download English Version:

<https://daneshyari.com/en/article/6581284>

Download Persian Version:

<https://daneshyari.com/article/6581284>

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