

# Accepted Manuscript

Products derived from waste plastics (PC, HIPS, ABS, PP and PA6) via hydrothermal treatment: Characterization and potential applications

Xuyuan Zhao, Lu Zhan, Bing Xie, Bin Gao



PII: S0045-6535(18)31007-5

DOI: 10.1016/j.chemosphere.2018.05.156

Reference: CHEM 21488

To appear in: *Chemosphere*

Received Date: 11 November 2017

Accepted Date: 25 May 2018

Please cite this article as: Xuyuan Zhao, Lu Zhan, Bing Xie, Bin Gao, Products derived from waste plastics (PC, HIPS, ABS, PP and PA6) via hydrothermal treatment: Characterization and potential applications, *Chemosphere* (2018), doi: 10.1016/j.chemosphere.2018.05.156

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.

Products derived from waste plastics (PC, HIPS, ABS, PP and PA6) via  
hydrothermal treatment: Characterization and potential applications

Xuyuan Zhao<sup>a</sup>, Lu Zhan<sup>\*a,b</sup>, Bing Xie<sup>a,b</sup>, Bin Gao<sup>c</sup>

<sup>a</sup> Shanghai Key Lab for Urban Ecological Processes and Eco-Restoration, School of Ecological  
and Environmental Sciences, East China Normal University, Shanghai 200241, China

<sup>b</sup> Shanghai Institute of Pollution Control and Ecological Security, 1515 North Zhongshan Road,  
Shanghai 200092, China

<sup>c</sup> Department of Agricultural and Biological Engineering, University of Florida, Gainesville, FL  
32611, USA

**Abstract**

In this study, hydrothermal method was applied for the treatment of five typical waste plastics (PC, HIPS, ABS, PP and PA6). The hydrothermal products of oils and solid residues were analyzed for the product slate and combustion behaviors. Some predominant chemical feedstock were detected in the oils, such as phenolic compounds and bisphenol A (BPA) in PC oils, single-ringed aromatic compounds and diphenyl-sketetons compounds in HIPS and ABS oils, alkanes in PP oils, and caprolactam (CPL) in PA6 oils. The hydrothermal solid residues were subjected to DSC analysis. Except the solid residues of PA6, all the solid residues had enormous improvement on the enthalpy of combustion. The solid residues of PC had the maximum promotion up to 576.03% compared to the raw material. The hydrothermal treatment significantly improved the energy density and facilitated effective

---

Corresponding author phone: +86 21 54341064; fax: +86 21 54341064; e-mail:  
[lzhan@des.ecnu.edu.cn](mailto:lzhan@des.ecnu.edu.cn)

Download English Version:

<https://daneshyari.com/en/article/8851016>

Download Persian Version:

<https://daneshyari.com/article/8851016>

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