

Author's Accepted Manuscript

Synthesis and characterization of waterborne polyurethane dispersion from glycolized products of waste polyethylene terephthalate used as soft and hard segment

Xing Zhou, Changqing Fang, Qian Yu, Rong Yang, Li Xie, Youliang Cheng, Yan Li



PII: S0143-7496(16)30253-6
DOI: <http://dx.doi.org/10.1016/j.ijadhadh.2016.12.010>
Reference: JAAD1943

To appear in: *International Journal of Adhesion and Adhesives*

Received date: 16 May 2014

Accepted date: 21 December 2016

Cite this article as: Xing Zhou, Changqing Fang, Qian Yu, Rong Yang, Li Xie, Youliang Cheng and Yan Li, Synthesis and characterization of waterborne polyurethane dispersion from glycolized products of waste polyethylene terephthalate used as soft and hard segment, *International Journal of Adhesion and Adhesives*, <http://dx.doi.org/10.1016/j.ijadhadh.2016.12.010>

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 galley proof before it is published in its final citable 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 waterborne polyurethane
dispersion from glycolized products of waste polyethylene
terephthalate used as soft and hard segment**

Xing Zhou, Changqing Fang^{*}, Qian Yu, Rong Yang, Li Xie, Youliang Cheng, Yan Li

Xi'an University of Technology, Xi'an 710048, China

^{*}Corresponding author. Tel.: +86 29 82312038, fax: +86 29 82312512.

fcqxaut@163.com

Abstract

Waste polyethylene terephthalate (PET) bottles were collected, cleaned and then depolymerized by glycolysis with neopentyl glycol (NPG) and dipropylene glycol (DPG), in the presence of N-butyl titanate catalyst. The product, named glycolized oligoesters, obtained through the depolymerization, were employed respectively in hard segment and soft segment in the synthesis of novel waterborne polyurethane dispersions (PUDs) via a simple and environmentally benign process. In addition, a polyurethane dispersion without glycolized oligoesters was synthesized as a comparison. The bulk structure of PET glycolized oligoesters and PUDs films were characterized by Fourier transform infrared spectroscopy (FT-IR), H-nuclear magnetic resonance (¹H NMR) and Gel permeation chromatography (GPC). The results illustrated that glycolized oligoesters were successfully introduced into the hard and soft segment of the polyurethanes. Furthermore, differential scanning

Download English Version:

<https://daneshyari.com/en/article/5014733>

Download Persian Version:

<https://daneshyari.com/article/5014733>

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