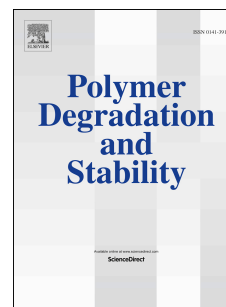


# Accepted Manuscript

Environmental biodegradation control of polymers by cleavage of disulfide bonds

Yuya Tachibana, Takuro Baba, Ken-ichi Kasuya



PII: S0141-3910(17)30003-4

DOI: [10.1016/j.polymdegradstab.2017.01.003](https://doi.org/10.1016/j.polymdegradstab.2017.01.003)

Reference: PDST 8142

To appear in: *Polymer Degradation and Stability*

Received Date: 27 November 2016

Revised Date: 26 December 2016

Accepted Date: 6 January 2017

Please cite this article as: Tachibana Y, Baba T, Kasuya K-i, Environmental biodegradation control of polymers by cleavage of disulfide bonds, *Polymer Degradation and Stability* (2017), doi: 10.1016/j.polymdegradstab.2017.01.003.

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.

# Environmental Biodegradation Control of Polymers by Cleavage of Disulfide Bonds

Yuya Tachibana, Takuro Baba, and Ken-ichi Kasuya\*

Division of Molecular Science, Faculty of Science and Technology, Gunma University, 1-5-1 Tenjin, Kiryu,  
Gunma, 376-8515, Japan

\*Corresponding Author. E-mail address: kkasuya@gunma-u.ac.jp (K. Kasuya)

## ABSTRACT

Ideal biodegradable polymers have high durability during use and high degradability in the natural environment it enters after use. A trigger system that uses external stimuli to change the chemical properties of a polymer or directly degrade the polymer to low molecular weight compounds is suitable for controlling the biodegradability of a polymer. In this study, we adopted the reductive cleavage of disulfide bonds as a trigger to control the biodegradability of polymers. We synthesized polyesters with disulfide bonds and demonstrated that the environmental biodegradability of these polymers could be triggered by cleavage of the disulfide bonds in a reductive environment.

**Keywords:** Biodegradable polymer; Disulfide bond; Reductive cleavage; Environmental biodegradability

Download English Version:

<https://daneshyari.com/en/article/5200805>

Download Persian Version:

<https://daneshyari.com/article/5200805>

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