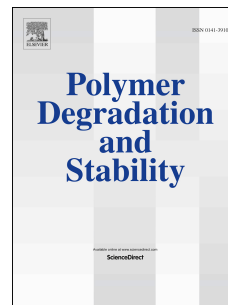


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# Identification of Antioxidants in Polymeric Insulating Materials by Terahertz Absorption Spectroscopy

Takuya Kozai<sup>1\*</sup>, Takuya Kaneko<sup>1</sup>, Naoshi Hirai<sup>1</sup>, and Yoshimichi Ohki<sup>1,2\*</sup>

<sup>1</sup>*Department of Electrical Engineering and Bioscience, Waseda University, Shinjuku-ku, Tokyo 169-8555, Japan*

<sup>2</sup>*Research Institute for Materials Science and Technology, Waseda University, Shinjuku-ku, Tokyo 169-8555, Japan*

\*E-mail: kozai0227@asagi.waseda.jp, yohki@waseda.jp

## Abstract

For the purpose of using organic polymeric materials for electrical insulation, various additives such as antioxidants are added to prevent degradation or oxidative decomposition of the polymers. Therefore, it is desirable that we can identify antioxidants added in polymers by instrument analyses. In this research, terahertz absorption spectroscopy was conducted for nine kinds of antioxidants. The spectroscopy was also conducted for sheets of low-density polyethylene, to which each antioxidant had been added with different contents. As a result, it has become clear that each antioxidant has its own specific spectrum. In addition, for most antioxidants, the absorption intensity is proportional to the content of antioxidant added in LDPE. However, several absorption peaks change their spectral shapes when the antioxidant is in LDPE.

## Keywords

Terahertz wave, spectroscopy, insulating polymer, polyethylene, antioxidant, radical scavenger

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