



Keigo MIKAME, Ph.D.

Associate Professor

Program: Life and Food Sciences

Area: Applied Life and Food Sciences

Undergraduate: Dept. of Applied Biological Chemistry

Professional Expertise

- Wood chemistry
 - Separation and utilization woody biomass components

Research Fields of Interest

Recently attention has been turned to the utilization of plant biomaterials in the place of petroleum for chemical feedstocks. The chemical feedstocks are distributed in two major categories contained aliphatic and aromatic compounds. The aliphatic compounds of plant biomaterials have already been partially commercialized. For example, polylactic acid as a biodegradable plastic from corn or sugarcane molasses and surfactant from soybean oil or palm oil has already been produce in large volume. On the other hands, the aromatic compounds as petroleum substitute from plant biomaterials are hardly produced.

This field aims at getting basic information on material recycling system in the ecosystem through analyzing the functions of forest resources. For this purpose, we research on sustainable utilization system of forest resources, dealing especially with the separation of plant cell wall components, the design of functionality controllable polymers, the design and preparation of recyclable materials, and the establishment of a social system leading to sustainable and cascade-type flow of forest resources in the molecular level.

Education

2007: Ph.D. in Science, Graduate School of Bioresources, Mie University, Japan

1995: M.S. in Forest and Biomaterials Science, Graduate School of Agriculture, Kyoto University, Japan

1993: B.S. in Bioresources, Mie University, Japan

Professional Societies and Activities

1. Wood Research Society
2. Polymer Science

Awards

1. Encouraging prize from Thermosetting Plastics Industry Association

Major Publications

Papers

- [1] Sato, S., Y. Mukai, Y. Tokuoka, K. Mikame, M. Funaoka, and S. Fujita, Effect of lignin-derived lignophenols on hepatic lipid metabolism in rats fed a high-fat diet, *Environmental Toxicology and Pharmacology*, 34, 228-234(2012)
- [2] Mikame, K. and M. Funaoka, Conversion of alkali-treated lignophenols to monophenols by the nucleus exchange reaction, *Trans. the Materials Research Society of Japan*, 36, 585-588 (2011)
- [3] Mikame, K. and M. Funaoka, Successive structural conversion of lignophenol by Lewis acid treatment for chemical feedstock, *J. Network Polymer of Japan*, 32, 70-77 (2011)
- [4] Mukai, Y., T. Norikura, S. Fujita, K. Mikame, M. Funaoka and S. Sato, Effect of lignin-derived lignophenols on vascular oxidative stress and inflammation in streptozotocin-induced diabetic rats, *Mol Cell Biochem*, 348, 117-124(2011)
- [5] Mikame, K. and M. Funaoka, Structural conversion of lignophenol derivatives by Lewis acid treatment for chemical feedstock, *Trans. the Materials Research Society of Japan*, 35, 975-978 (2010)
- [6] Norikura, T., Y. Mukai, S. Fujita, K. Mikame, M. Funaoka and S. Sato, Lignophenols decrease oleate-induced apolipoprotein-B secretion in HepG2 cells, *Basic & Clinical Pharmacology & Toxicology*, 107, 813-817 (2010)
- [7] Mikame, K. and M. Funaoka, Functionality control of lignophenol by demethylation of methoxyl group -Successive structural conversion of syringyl type lignophenol-, *Trans. the Materials Research Society of Japan*, 34, 679-682 (2009)
- [8] Sato, S., Y. Mukai, J. Yamate, T. Norikura, Y. Morinaga, K. Mikame, M. Funaoka, and S. Fujita, Lignin-derived lignophenols attenuate oxidative and inflammatory damage to the kidney in streptozotocin-induced diabetic rats, *Free Radical Research*, 43, 1205-1213 (2009)
- [9] Mikame, K., Y. Yamamoto and M. Funaoka, Potential as molecule materials of a fiberboard, *Journal of Japanese Society of Material Cycles and Waste Management*, 20, 311-319 (2009)
- [10] Mikame, K. and M. Funaoka, Successive structural conversion of lignin for chemical feedstock, *Trans. the Materials Research Society of Japan*, 33, 1149-1152 (2008)
- [11] Mikame, K. and M. Funaoka, Conversion and separation pattern of lignocellulosic carbohydrates through the phase-separation system, *Polymer Journal*, 38, 694-702 (2006)
- [12] Mikame, K. and M. Funaoka, Polymer structure of lignophenol II - Comparison of molecular morphology of lignophenol and conventional lignins, *Polymer Journal*, 38, 592-596 (2006)
- [13] Mikame, K. and M. Funaoka, Polymer structure of lignophenol I - Structure and function of fractionated lignophenol, *Polymer Journal*, 38, 585-591 (2006)

Books

- [1] Mikame, K. 2009. *Advanced Technologies for Woody Organic Resources II* Publishing CMC. pp. 49-55, 82-88
- [2] Mikame, K. 2005. *Advanced Technologies for Woody Organic Resources* Publishing CMC. pp85-90, 205-212