



Content:

Steam explosion method has been recognized as one of the most effective pretreatments for delignification of wood biomass. This method seems to be very effective for hardwoods, but ineffective for softwoods that contain a comparatively large amount of condensed-type lignin. Therefore, the steam explosion with only ultrahigh temperature and pressure steam, i.e. up to 281 °C and 67 atm, that are significantly higher than the conventional steam explosion (200–243 °C and 15–35 atm), was applied for not only the pretreatment of softwood biomass but also the effective conversion into bioethanol and useful materials.

This investigation aims to develop the total conversion process structural components of softwood biomass into useful fuel and materials using Japanese cedar. The structural components, i.e. cellulose, water soluble material, methanol soluble lignin, and Klason lignin, in the softwood biomass treated by the steam explosion were converted into various biofuels and useful materials, i.e. antioxidant materials, electronic circuit board made of lignin, ethanol, methane gas, and cellulose nanofiber materials.

Keywords : Biomass Conversion, Bioremediation

E-mail: yinakamu@bio.tokushima-u.ac.jp

Tel. +81-88-656-7518

Fax: +81-88-656-9071