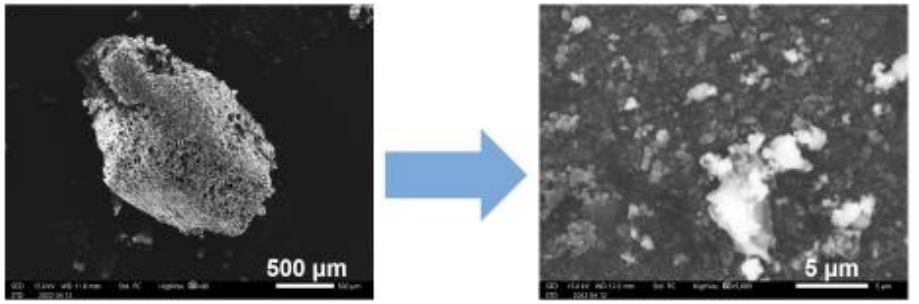
Tohoku Univ. Technology

Continuous pretreatment method for high concentration biomass

Method of atomization in fluidized cavitation for useful substances extraction from waste biomass



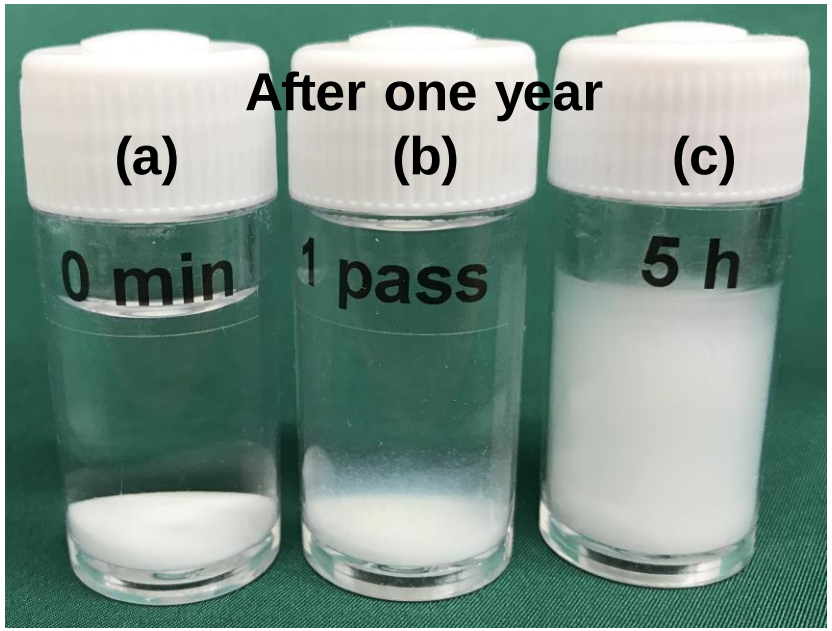
Overview

Research on useful substances extraction such as caffeic acid and sugar from waste biomass like coffee grounds or non-standard product of potato and rice snack-foods has been actively performed. In order to efficiently obtain useful biomass-derived substances, pretreatment is important to destroy the robust structure of the raw material biomass.

Conventional pretreatment technology required high-pressure dispersers of over 100 MPa so the cost was an issue. Moreover, the treatment efficiency was low since even technology able to treat at low pressure required a process to grind the biomass to sub mm order from the beginning, and also the equipment could be blocked for high concentration biomass.

This invention is about a method for continuous pretreatment of high concentration biomass. For mixture of biomass with liquid, flow cavitation is generated at low pressure of about 3 MPa, and the biomass is crushed and defibrillated by the cavitation. Highly concentrated suspension can also be treated with up to 50 mass% biomass. As shown in the right figure, this pretreatment method is expected to contribute to more efficient extraction of useful substances because it enables atomization of mm-order biomass to sub-micron order.

Features･Outstandings



Product Application

- Pretreatment for extracting caffeic acid from coffee grounds
- Pretreatment for extracting sugar from snack-foods waste
- Other general pretreatment for extracting useful substances from waste biomass

Related Works

[1] *Ind. Eng. Chem. Res*. 2016, 55, 1866.
(*About the old model of this invention)

IP Data

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