

TITLE

Development of a new saline organic waste treatment technology with low cost and low environmental load by multifunctional reactors in methane fermentation process

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ABSTRACT

Marine fouling organisms exemplified such as blue mussels have been intermittently and suddenly discharged from coastal regions of the world. Since these contain saline matters, it is difficult to recycle them as animal feed stuffs and compost. Therefore, it is urgently needed to develop the technology of widespread utilization of such biomasses.

This research project aims to simplify the existing multiple processes to a single reactor that equips manifold functions, and to achieve significant reduction of required cost and energy in the process of methane fermentation treatment. In year 2008-2011, we conducted the research subjects as mentioned below.

1. The collection of blue mussels for experiments, and the research and the analysis on species composition of marine fouling organisms.
2. The Simultaneous processes of methane fermentation and denitrification in blue mussels.
3. Saline adaptation of anaerobic sludge in mesophilic UASB reactors.
4. The treatment of blue mussels in an aerobic and considered two types of whole treatment processes equipped with a low-cost and multifunction reactor.
5. Development of a reactor based on the whole treatment process mentioned above.

KEYWORDS:

Saline organic waste treatment, Multifunctional reactor, Methane fermentation, Blue mussel treatment, Simultaneous processes of methane fermentation and denitrification