



Development of novel wastewater treatment as sustainable technology

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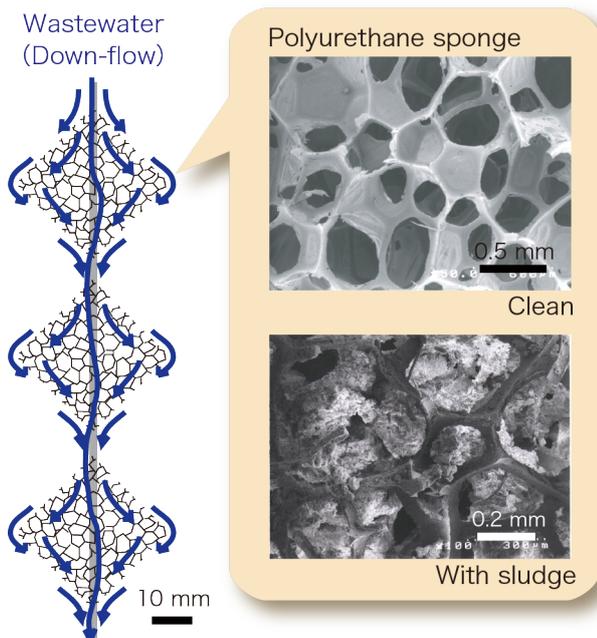
Research Fields Environmental engineering, biological wastewater treatment

Keywords DHS, nitrogen removal, sulfur cycle, methane fermentation

● Research Outline

In last decade, a down-flow hanging sponge (DHS) reactor was developed by Japanese research groups (Nagaoka Univ. of Tech., Tohoku Univ., Hiroshima Univ., National Institute for Environmental Studies, Japan and Gifu-NCT etc.) as an aerobic post-treatment of the UASB effluent.

Recently DHS reactors are applied to various wastewater treatment. The characteristics and the instance of DHS reactor is as follows;



Reactor height: 1-4 m
Sponge pore size: 0.5-0.8 mm

High sludge conc.: 20~40 g-MLSS/L-sponge vol.
No-need external aeration (when DHS use for aerobic treatment)
No-need sludge handling, low excess sludge : 0.06~0.11 g-SS/g-removed BOD
Microbes with low growth rate can retain
Substrate to enter the biofilm by advection

The instance of wastewater treatment using DHS reactor
Opened DHS reactor for aerobic treatment

- Effluent from the anaerobic sewage treatment
- Food industrial w.w.
- High rate treatment with pure oxygen
- Sulfide oxidation from anaerobic treatment effluent

Closed DHS reactor for aerobic or anaerobic treatment

- High rate treatment with pure oxygen
- Partial nitrification
- Methane recovery from anaerobic treatment effluent
- Anaerobic solubilization of particle organic matter
- Methane fermentation

And this laboratory has great skills; reactor operation, water analysis, sludge analysis, activity measurement, micro sensor analysis etc..

If you have any questions, please feel free to contact us.