

Vatuga Intaraprasong 2009: Formation of ANAMMOX Granule Using Submerged Media. Master of Engineering (Environmental Engineering), Major Field: Environmental Engineering, Department of Environmental Engineering. Thesis Advisor: Assistant Professor Sanya Sirivithayapakorn, Ph.D. 74 pages.

Experimental studies for granulation of ANAMMOX by submerged media for biomass retention in Batch reactors with synthesis medium. To enhance the granulation process, 3 types of core media (i.e. sand, ceramic and granulation activated carbon) were added and compare with one control experiment without media.

The nitrogen removal efficiency was more than 98% in experiment that were added core media. But control reactor nitrogen removal efficiency was 16.41 %. The continuous operation in the adding 2 grams of sand in control reactor, the nitrogen removal efficiency increase gradually and at the end of the experiment, the efficiency was 91.84 %. Granulations of ANAMMOX were calculated by Derjaguin–Landau–Verwey–Overbeek (DLVO) theory using the interaction energy curves between cell of ANAMMOX and media or ANAMMOX and ANAMMOX. This study compare the result between DLVO theory and photograph from Scanning electron microscope (SEM). The granule formation predict by DLVO theory was in according to the observations from scanning electron microscope. However, there were several factors other than attachment that involved in granular formation and were not included in the DLVO theory, such as surface media, structure of media, and turbulent.

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Thesis Advisor's signature