



Cultivation of aerobic granular sludge by modification of seeding condition

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ABSTRACT

This study aims to cultivate aerobic granular sludge by using low-strength domestic wastewater. The cultivation was conducted by modifying the seeding condition whereby the seed sludge was mixed with anaerobic granular sludge. Sequencing batch reactor system consisted of two columns were used namely R_c as control reactor and R_c containing anaerobic granular sludge were utilized to produce aerobic granular sludge. The results indicated that anaerobic granular sludge may be used to induce rapid granulation process, resulting in aerobic granular sludge with more desirable characteristics as compared to the conventional activated sludge. The developed granular sludge exhibited excellent settling velocity (74.6 m/h) and low SVI_{30} . Total phosphorus removal was also enhanced in reactor R_c . Cocci-shaped bacteria were mainly observed on the granular surface along with few of rod-shaped and filamentous bacteria. Moreover, Proteobacteria dominated the microbial population in the aerobic granules. This study demonstrated the possibility to achieve rapid granulation using anaerobic granules and activated sludge as the seeding materials.

Keywords: Aerobic granulation; Biological nutrient removal; Domestic wastewater treatment; Low-strength wastewater

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