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## Nitrogen removal characteristics of simultaneous nitrification and denitrification in various bioreactors

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This study focused on acclimatizing nitrogen removal sludge and enhancement of nitrogen removal efficiency using different carriers in bioreactors. Three types of carriers used in the research were concrete block, sponge and commercial carrier. The synthesis wastewater was continuously fed to reactors, the controlled aeration period was supplied and maintained three hours for aeration and five hours for non-aeration (retention time was approximately 12 hours). The reactors were operated at 40 mg/L and 80 mg/L of ammonium concentration with C/N 2.5 and 3.5. The performance of reactors was compared, and results showed that they had absolutely high performances of ammonium removal (up to 95%) and total nitrogen removal (up to 88%). The sponge reactor had higher performance compared to the concrete block and commercial reactors. The main processes for nitrogen removal were nitrification and denitrification. Also, the active bacteria were observed on both surfaces of the carriers by using SEM.

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