

Bio-electrochemical treatment of wastewater with high ammonium concentration

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ABSTRACT

In this study, a multi-storey bio-electrochemical reactor equipped with a pump-around system has been developed to adjust pH at desired value during treatment of synthetic ammonium-rich wastewater. The efficiency of the reactor to remove a high concentration of ammonium has been evaluated at various C/N ratios. The results demonstrated that a multi-storey reactor had high potential to remove ammonium within the function of an extensive operational range of C/N ratio (0.5–4), which is three times higher than the twin-chamber up-flow bio-electrochemical reactor. The accumulation of nitrite in the anode at the highest C/N ratio of 4 was less than other applied ratios, with 64% ammonium removal.

Keywords: Wastewater; Nitrification; Denitrification; Electrolysis; Pump-around system

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