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NITROUS OXIDE EMISSION DURING NITRIFICATION OF INFLUENTS WITH DIFFERENT AMMONIUM CONCENTRATIONS

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Abstract

As the serious effect of climate change and global warming is recognized, nitrous oxide (N_2O) emission during wastewater treatment is receiving lots of attention due to its high potential to greenhouse effect. In this study, nitrifiers were acclimated in sequencing batch reactors with influent ammonium nitrogen (NH_4-N) concentrations of 60 mg/L (SBR60) and 180 mg/L (SBR180), respectively. Nitrous oxide emission during nitrification was examined in both typical cycles and batch experiments. The dominant ammonia oxidizing bacteria (AOB) of the enriched nitrifiers in both reactors were from *Nitrosomonas oligotropha* lineage. For the enriched nitrifiers, N_2O emission during nitrification was mainly due to activities of AOB. Within typical cycles, the conversion ratio of the produced N_2O to the removed NH_4-N was 5.2% in SBR60 and 1.6% in SBR180.

Key words: greenhouse gas emission, nitrification, *Nitrosomonas oligotropha*, nitrous oxide

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