

Nitritation of Ammonium-rich Wastewater by SHARON Process

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In the research field of ammonium removal from wastewater, nitritation ($\text{NH}_4^+ \rightarrow \text{NO}_2^-$) has been noticed because 25% of oxygen requirement can be saved theoretically by avoiding nitrification ($\text{NO}_2^- \rightarrow \text{NO}_3^-$) in comparison with conventional ammonium removal. Some researches have been carried out to obtain stable nitritation performance but the SHARON process is the only reported process in which nitritation is successfully maintained in practice over a long time period. In recent years, the coupling of the SHARON process with the ANAMMOX process, in which ammonium and nitrite are converted to nitrogen gas under anoxic condition, finds increasing support in the search for sustainable wastewater treatment.

In this study, two continuous-stirred tank reactors (4L) have been operated under conditions of relatively short HRT and high temperature (35°C) over two years. Ammonium removal efficiency is now over 90% and nitrite over oxidized nitrogen is about 75% for both of the reactors. In the near future, we're going to control either DO concentration or pH in the reactor to obtain an optimal effluent for the subsequent ANAMMOX process.