

Suttawadee Siriyanon 2011: The Treatment of High Nitrogen Wastewater by Partial Nitrification Process of Anammox Process. Master of Engineering (Environmental Engineering), Major Field: Environmental Engineering, Department of Environmental Engineering. Thesis Advisor: Assistant Professor Mongkol Damrongsri, Dr.Eng  
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The conventional biological nitrogen removal process to treat nitrogen from wastewater is nitrification process by aeration and follows up with denitrification process. These processes are very well known and worldwide. Nowadays the development of partial nitrification process change ammonia to nitrite under aerobic condition by ammonium oxidation which called this process as: Single Reactor System for High Ammonium Removal Over Nitrite (SHARON) and follow up by Anaerobic Ammonium Oxidation (Anammox) process. This Anammox process is able to treat nitrogen in wastewater by changing nitrite to nitrogen gas under anaerobic condition.

In this study the lab scale reactor of volume 8 L was established in order to test for the partial nitrification process. The variable parameters to control the study were ammonia loading rate and food to microorganism ratio, F/M. The dissolved oxygen in order to control partial nitrification process was control at 0.3-0.7 mg/L. The result of the experiments found that, at ammonia loading rate of 0.05, 0.15, 0.30 and 0.50 kg-N/m<sup>3</sup>-day and F/M ratio of 0.28, 0.83, 1.67 and 2.78 kg.N/kg.MVLSS-day, the ammonia removal efficiencies were 52, 53, 51 and 53 percent. Therefore, the specific ammonia utilization rates were 0.15, 0.49, 0.94, and 1.66 kg-N/kgMLVSS-day, respectively. The ratios of nitrite produced to ammonia utilization were equal to 0.80, 0.98, 1.21 and 1.19 respectively.

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