

고농도 질소 반류수 처리 및 자원회수를 위한 SHARON과 ANAMMOX 통합 모델링, 시스템 해석 및 제어구조 결정 (Benchmark simulation model)

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Nitrogen removal efficiency in wastewater treatment plants (WWTPs) urges to be improved, given the toxic effects of nitrogen in waters. In this study, an enhanced nitrogen removal mechanism was implemented in the benchmark simulation model No. 2 (BSM2) of a WWTP. Comparative scenarios were evaluated for conditions with and without the SHARON and ANAMMOX processes, and process control for ammonium concentration. The results showed that SHARON and ANAMMOX processes improved the nitrogen removal efficiency by approximately 15% compared to the base scenario, and the proposed control improved the influent conditions for a better nitrogen removal efficiency. This model provides insight on advances in resource recovery and control processes from nitrogen removal technologies in WWTPs. Acknowledgements: This work was supported by the National Research Foundation of Korea (NRF) grant funded by the Korea government (MSIT) (No. NRF-2017R1E1A1A03070713) and Korea Ministry of Environment (MOE) as Graduate School specialized in Climate Change.