

## Development of Anammox Control Factor and Operation Technology for Wastewater Treatment

윤다희, 윤좌문<sup>1</sup>, 조환철<sup>2</sup>, 유수남<sup>2</sup>, 김성주<sup>2</sup>, 이문용<sup>†</sup>  
영남대학교; <sup>1</sup>(주)셀파스페이스; <sup>2</sup>(주)두산중공업  
(mynlee@ynu.ac.kr<sup>†</sup>)

Anaerobic ammonium oxidation is a process of the nitrogen cycle that convert ammonium at the expense of nitrate to nitrogen involving bacteria. In recent decades, Anammox is utilized to process ammonium in wastewater plant. But, it has several weaknesses which long processing time and high sensitivity to disturbances are. In this study, control factor and operation technology are studied to overcome the aforementioned challenges. A sequencing batch reactor is modeled using the activated sludge model. The general form of ASM is developed by International Water Association and mainly use to study biological processes in hypothetical systems. In real operation, the concentration of  $\text{NO}_3^-$ , which is crucial to control, is hard to measure. Therefore, a soft-sensor is used such as conductivity and pH must be incorporated in the developmental model to reconstruct such a relationship and thus also to estimate the  $\text{NO}_3^-$ . Because ASM can be applied for optimization when carefully calibrated with reference data for sludge production and nutrients in the effluent, a lab-scale plant is used to verify and validate the developed model parameter.