

하수처리장내 유입 나노 물질의 물성기반 제거
메카니즘 분류, 거동모델 및 최적 제거방법의
통합 방법론 개발

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The release of silver nanoparticle (AgNP) to wastewater treatment plant (WWTP) has been received lots of attention due to the wide AgNP use, which accumulate and disrupt biological processes in WWTP. In this study, a AgNP fate model for WWTP (ASM-Ag), which includes adsorption/desorption and dissolution process of AgNPs with activated sludge model no.1 (ASM1) is proposed. Correlations between parameters and components of the ASM-Ag model are interpreted by multivariate statistical analysis. Principle component analysis (PCA) and partial least square (PLS) are used to find the correlations in multidimensional space by random combinations of the ASM-Ag parameters. PCA shows strong correlations between 1)adsorbed AgNP and heterotrops and 2)AgNP and Ag⁺ for the ASM-Ag components. PLS indicates that solid-liquid partitioning, desorption rate, dissolution rate and heterotrophic decay rate coefficients are important parameters for concentration of AgNP in WWTP effluent.

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