Public Abstract

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Title:Effect of Silver Nanoparticles on Planktonic and Biofilm Cell Growth

Nanosilver is emerging materials broadly used in commercial consumer products because of its strong antimicrobial activity. Nanosilver inhibits microbial activity through silver ion release and cell internalization. We test its toxicity to nitrification in wastewater treatment. Nanosilver was more toxic than silver ion at same concentration. Nano-toxicity was size-dependent and related with intracellular reactive oxygen species. Sulfide reduced the toxicity of silver nanoparticles after formation of AgxSy complexe. *E. coli* biofilm cells were more resistance to the toxicity of Ag NPs than the planktonic cells. Spatial distribution of nanosilver in biofilms showed biofilms might confer resistance to nanosilver through particle aggregation and retarded Ag+/Ag NPs diffusion.