

Electrochemical nitrification using AOB(Ammonia oxidizing bacteria)-adapted activated sludge

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Ammonia in wastewater has been globally concerned as an important pollutant. To treat ammonia, many researches have been performed about the ammonia removal. Biological nitrification to remove the ammonia is the most widely used, and partial nitrification is becoming a key technology in biological nitrification. Because oxygen is the most important factor in aerobic nitrification, electrochemical supply of oxygen has been considered. In this research, bio-electrochemical ammonia degrading reactor was designed. AOB (ammonia oxidizing bacteria) dominated activated sludge was immobilized on the anode electrode. No inhibition effect by electric current was observed and nitrification rate of immobilized electrode was as similar as that of free activated sludge. This research showed the possibility of effective electrochemical aeration by directing immobilization of nitrifiers, especially AOB-dominant activated sludge.