



Aerobic granular sludge stabilization in biocathode chamber of newly constructed continue flow microbial fuel cell system treating synthetic and pharmaceutical wastewater

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ABSTRACT

Relative stable aerobic granular sludge (AGS) formed in a newly constructed continue flow microbial fuel cell (cf-MFC) system. AGS bulking caused by filamentous over-growth was observed in treating simulated wastewater with COD concentration of around 1,000 mg/L after more than 50 d. Addition of pharmaceutical wastewater in the influent of the cf-MFC at COD concentration of around 1,500 mg/L alleviated AGS bulking obviously, with average COD removal efficiency of 82.2%. However, AGS self-collapse happened after influent COD concentration of the pharmaceutical wastewater increased to around 2,500 mg/L, corresponding COD removal efficiency decreased to 58.2% dramatically. High simultaneous nitrification and denitrification performance was obtained in the cf-MFC, which was affected by the addition of pharmaceutical wastewater. Moreover, appearance variations of the AGS under different operation conditions were shown.

Keywords: Aerobic granular sludge; Continue flow microbial fuel cell; Stabilization; Filamentous over-growth; Self-collapse

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