MBR의 막파울링 모니터링 및 진단의 Dynamic Fouling Indexes 연구

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Membrane fouling is a serious problem in membrane bioreactor (MBR) processes which limits the widespread application of MBRs. Therefore, importance of precise prediction of MBR fouling and accurate determination of membrane cleaning interval has been increased in recent years. However, traditional methodologies for fouling diagnosis based on the operational condition of MBRs is assumed as steady-state, which cannot capture the dynamics of a real MBR plant. Therefore, this study aims to overcome the limitation of traditional methodologies. In this study, we proposed dynamic fouling monitoring indexes using recursive least square (RLS) method, after that using the concepts of differential and integral calculus applied on those new indexes to diagnose the membrane fouling and determine the membrane cleaning interval. Proposed methods have been tested with the data obtained from a pilot-scale MBR plant.