

## Membrane Coupled Fixed Phase Biofilm Reactor for Advanced Wastewater Treatment

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Membrane bioreactor (MBR) technology has become widespread as more efficient and reliable processes are needed for municipal and industrial wastewater treatment. As one of the most serious operational problems in membrane applications, biofouling causes severe flux decline, reduces membrane efficiency, increases membrane replacement and operational and maintenance costs. To overcome this disadvantage, this study speculated on a membrane coupled fixed phase biofilm reactor (M-CFPBR) process in which submerged hollow fiber membranes are combined with a fixed phase biofilm reactor. In this work, we investigated the filtration characteristics of the submerged membrane and the removal efficiency of nutrients according to changes in air flow rate and support carrier volume fraction in the M-CFPBR process using a waste lime support carrier.