

Hybrid Water Treatment Process of Multi-channel Ceramic MF and Photocatalyst Loaded PES Beads: Effect of Water-back-flushing and Photocatalyst

박지용*, Bolor Amarsanaa
한림대학교
(jypark@hallym.ac.kr*)

In this study, the effects of water-back-flushing period (filtration time, FT) and TiO_2 photocatalyst loaded polyethersulfone (PES) beads concentration were investigated in the hybrid process of multi-channel ceramic MF and photocatalyst for advanced treatment water treatment. Multi-channel ceramic MF membrane (pore size: $0.4 \mu\text{m}$) used here was coated with σ -alumina on supporting layer of σ -alumina. Instead of natural organic matters and fine inorganic particles in natural water source, a quantity of humic acid and kaolin was dissolved in distilled water And UV with 352 nm was radiated from outside of acryl module by 2 UV lamps. As FT decreased, treatment efficiency of turbidity increased a little from 96.7% to 97.5%, and that of UV_{254} increased much from 80.2% to 88.9%. The highest efficient condition of our hybrid water treatment system by ceramic MF and photocatalyst was FT 2 min and BT 10 sec. As result of photocatalyst PES beads concentration, R_f was minimum and J maximum value at 40 mg/L when photocatalyst beads concentration was changed from 50 mg/L to 5 mg/L.