

Optimization of Hybrid System with UV/TiO₂/UF Submerged Hollow Fiber Membrane for the Decomposition of Bisphenol A

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Photocatalysis is a promising technology for non-biodegradable wastewater treatment. Thus, it has been successfully applied in the water and wastewater treatment. TiO₂ is the most often used photocatalyst due to its considerable photocatalytic activity, high stability, non-environmental impact and low cost. TiO₂ particles after the photocatalytic detoxification is usually suspended as slurry in the water. TiO₂ are very fine particle with an average particle size of about 300 nm (Degussa-P25). Thus, how to separate TiO₂ particles has become an extremely important issue for the development of photocatalysis technology. Many solid-liquid separation methods have been studied for the separation of TiO₂ particles using sedimentation, flotation and filtration. Among them, membrane filtration is one of the most promising separation process involving colloids and fine particles. The primary objective was to investigate optimum conditions of hybrid process consisting of UV/TiO₂/UF submerged hollow fiber membrane in terms of operating pressure, TiO₂ dose, operating times etc. It was found that the hybrid process used in this work was suitable for non-degradable wastewater treatment.