

Sensitivity Analysis for Modeling, Simulation and Experiment of Wastewater Treatment by Hollow Fiber Membrane Contactor

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Wastewater treatment by ozonation is the interested topic for the current researches. In this study, the process of wastewater treatment in hollow fiber membrane contactor was considered including gas phase (Oxygen and Ozone) in shell side, membrane of non wetted mode and liquid phase (water and phenol) in tube side. The 2D dynamic model for shell side, membrane and tube side were built in term of mass and momentum conservations. The analysis was carried out by comparison between simulation and experimental results at different operation conditions including the change of inlet flow rate at shell side, inlet flow rate at tube side and inlet phenol concentration at tube side and the minor errors (< 8%) were achieved. The overall mass transfer coefficient for liquid phase was also calculated and the relation between Sh, Re and Sc was suggested. Based on the results, we can conclude that the 2D dynamic model can be used to predict the performance of hollow fiber membrane contactor.