掃流微過濾的模擬---多相流模式

The study simulates cake growth of cross-flow microfiltration by multiphase flow model. In order to discuss cake property and fouling mechanism, we experiment on cross-flow microfiltration. The data can be compared with simulation results and realize the property of cross-flow microfiltration. A filter membrane, made of mixed cellulose ester, with a mean pore size of 0.1 .mu.m is used to filter 0.8 .mu.m PMMA particles. On two-phase flow while varying suspension concentration and cross-flow velocity, we show that filtration rate is lowered with higher suspension concentration and lower cross-flow velocity, while average porosity is lowered as well. Also, we use Computational Fluid dynamics, CFD, software FLUENT6.2's multiphase flow model to calculate cake growth. The software is used to estimate cake height and weight. We also use force analysis to estimate fouling mechanism. Lastly, using results obtained from dynamic experiment, we know that cake average porosity is lower with filtration time, however, cake resistance is higher.