薄膜表面形態對微過濾中粒子結垢之影響

The effect of membrane morphology on the particle fouling in a "dead-end" microfiltration is studied by use of membrane blocking models. Three kinds of membranes: Isopore, Durapore, and MF-Millipore with two mean pore sizes are used for filtering PMMA particles. Membrane blockings occur in the early period of filtration; the blocking index then suddenly drops to zero at a critical point and follows the cake filtration model. The membrane blocking charts are established for relating the blocking index, filtration rate, and particle accumulation. The resistance coefficients can be correlated to a unique function of blocking index. MF is the easiest to be blocked under a fixed filtration rate; Isopore is also easier to be blocked due to its low pore density. In addition, Isopore has the highest blocking index while MF has the lowest under a given particle accumulation. To compare the critical conditions, the critical value of MF occurs at the lowest particle accumulation and the highest filtration rate, however, Isopore occurs at the highest particle accumulation and the lowest filtration rate. Those results are due to different membrane surface morphologies and membrane pore structures.