Accumulated impact of operating conditions on the specific cake resistance in dead-end microfiltration mode

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ABSTRACT

A series of dead-end unstirred microfiltration experiments were conducted. Impact of different operating conditions (trans-membrane pressure (TMP), temperature, and concentration) on the specific cake resistance (SCR) using yeast suspension and polyethersulfone membranes of 0.1 \( \mu \text{m} \) was systematically studied. The results showed that TMP, temperature, and concentration have a significant influence on the SCR. The SCR increased with the increasing concentration and TMP, while decreased with the increasing temperature. The sequence of average accumulated impact of the operating conditions on the SCR was TMP (54.6%) > temperature (−24.2%) > concentration (21.1%). The total accumulated impact of operating conditions on the SCR was 44.5%. This result provides the basis for process optimization and process modeling.

Keywords: Impact; Operating conditions; Specific cake resistance; Dead-end unstirred; Multi-regression method

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