## عنوان مقاله:

Effect of Fouling and Backwashing on the Pore Size Distribution of UF Hollow Fiber Membranes

## محل انتشار:

دومین همایش ملی غشا و فرایندهای غشایی (سال: 1394)

تعداد صفحات اصل مقاله: 6

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## خلاصه مقاله:

The changes in pore size distribution (PSD) of UF hollow fiber membranes due to residual fouling and periodical backwashing of the fibers were investigated in this work by using a novel PSD determination technique. In addition, membrane stability against stress due to backwashing was evaluated by subjecting fibers to periodical filtration and backwash of pure water. The pore sizes of clean, fouled and backwashed membranes were analyzed with evapoporometry (EP). Evapoporometry is a novel pore-size characterization technique based on vapor pressure depression that can detect pores in UF membranes over the full spectrum of pore sizes [1, 2]. In order to study the effect of backwashing and residual fouling on the pore size distribution of UF hollow fiber membranes, filtration of a mixture of bentonite and humic acid was performed at various permeate fluxes for 10 cycles (2 minutes backwash duration every 15 minutes of filtration). The results showed that pore properties changed when the membranes were subjected to filtration and backwash cycles. In the absence of fouling, backwash flow was found to increase the maximum pore size and alter the pore size distribution with approximately 10% increase in pore size. Under fouling conditions, the larger pores were more prone to pore blocking than small pores. However backwashing was more effective in restoring these larger pores

## کلمات کلیدی:

Evapoporometry, Fouling, Backwashing, UF hollow fiber membranes