

Figure 1. Schematic of the atmospheric-pressure ALD concept for tuning and functionalizing nanopores in tubular ceramic nanofiltration membranes. The grey areas on both ends of the membrane tube indicate the approximate length of the glass seals on the inside and outside of the membrane tube. The black dots indicate the positioning of the O-rings providing the seal between the feed side and the permeate side of the membrane. During the *in-line* gas permeance testing, valve (V5) downflow behind the membrane module is closed and nitrogen permeates through the membrane wall to the exhaust.

Legend: MFC = mass flow controller, MFM = mass flow meter, NV = needle valve, PI = pressure indicator, V = valve, PI = pressure indicator.

After Nijboer, *et al.*, ref. [2].

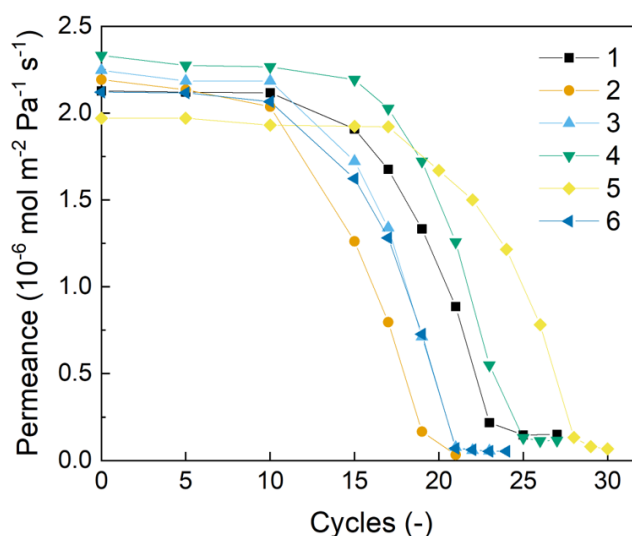


Figure 2. In-line measured gas permeance as a function of the number of ALD cycles. Samples with a slight difference in supporting morphology show an initial plateau region, followed by a decrease in permeance due to layer growth in the pores, resulting in a pore size reduction. In the end, when a layer is formed over the pores, a final plateau is reached.