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**Flow and fouling in membrane filters: Effects of membrane morphology** PEJMAN SANAEI, LINDA J. CUMMINGS, New Jersey Institute of Technology — Membrane filters are widely-used in microfiltration applications. Many types of filter membranes are produced commercially, for different filtration applications, but broadly speaking the requirements are to achieve fine control of separation, with low power consumption. The answer to this problem might seem obvious: select the membrane with the largest pore size and void fraction consistent with the separation requirements. However, membrane fouling (an inevitable consequence of successful filtration) is a complicated process, which depends on many parameters other than membrane pore size and void fraction; and which itself greatly affects the filtration process and membrane functionality. In this work we formulate mathematical models that can (i) account for the membrane internal morphology (internal structure, pore size & shape, etc.); (ii) fouling of membranes with specific morphology; and (iii) make some predictions as to what type of membrane morphology might offer optimum filtration performance.

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