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| **Title:** | Fabrication of Thinner Anodic Aluminum Oxide (AAO) Based Microchannels | | |
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| **Abstract:** |  |
| When thickness of a membrane reduces its mechanical properties go down but thinner the membrane better the performance of the membrane in terms of filtration. In this research we fabricated a fluid filtration system with a very thin anodic aluminum oxide (AAO) membrane. The system consists of microchannels at one side of membrane while other side is flat. For both sides inlet and outlet are given. The system can facilitate two types of fluid to flow at two sides of membrane for filtration. The membrane thickness achieved was 4 µm. The average pore diameter was 50 nm. The nanopores inside the membrane are highly straight and perpendicular to the surface. The fabricated channel and wall width was 200 µm and 100 µm successively. The pillars in between microchannels hold the membrane which is termed as partial freestanding alumina (PFA) and thereby retain desired mechanical properties of the membrane. The system was tested for diffusion between DI water and salted water. The DI water was flowed in channels and salted water on other side of membrane. The pH value of DI water changed after flow. Due to channel walls, AAO membrane fabricated in this system can tolerate more pressure which leads it to be used for convective flow by applying higher pressure gradient. | |