# A New Method of Fabricating Charge Mosaic Membranes by Inkjet Printing

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In order to help meet the growing demand for fresh water, intense efforts have been undertaken to broaden our fundamental knowledge of existing desalination technologies as well as to develop new desalination technologies. Piezodialysis is a promising membrane-based desalination technology that removes salt from water.[1] Charge mosaic membranes, which contain unique positively-charged and negatively-charged domains, facilitate the transport of ions and are suitable candidates for piezodialysis applications.[2,3] Here, we report a novel method of preparing charge mosaic membranes by inkjet printing polymer blends on template membranes. Mosaic patterns consisting of both positively-charged and negatively-charged domains were printed on PCTE membranes using a commercial inkjet printer. Poly(diallyldimethylammonium chloride) and poly(sodium 4-styrene sulfonate) were used to generate the positively-charged and negatively-charged domains, respectively. In this talk, we demonstrate that the surface charge of the mosaic membranes can be altered by controlling the deposition of the oppositely-charged materials.[4] The mosaic membranes show promising ion enrichment results in piezodialysis experiments. Inkjet printing offers a straightforward and scalable route toward the design and fabrication of charge mosaic membranes.

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