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**Life after wetting: Transport and concentration in paper-based microfluidics using ion concentration polarization** BRENDAN MACDONALD, University of Ontario Institute of Technology, MAX GONG, PEI ZHANG, DAVID SINTON, University of Toronto — In this talk, we present a method for active transport and concentration in paper-based microfluidic devices using ion concentration polarization. Paper-based devices rely on wicking for fluid transport and therefore have limited transport capacity upon reaching a wetted state. We present two methods, one external, and one embedded within the paper to enable transport after wetting is complete. The external device contains a nano-porous membrane and electrical connections required for ion concentration polarization. The device can be placed against the paper surface for transport and concentration. The imbedded method involves patterning the nano-porous membrane within the paper layer and electrical connections in contact with the wetted paper. We demonstrate transport and concentration in paper-based devices using both methods for dyes (fluorescent and non fluorescent), and for biological analytes in a lateral flow device.

Brendan MacDonald  
University of Ontario Institute of Technology

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