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**Increased Water Retention in Polymer Electrolyte Membranes Assisted by Capillary Condensation** MOON JEONG PARK, NITASH P. BALSARA, Lawrence Berkeley National Laboratory, University of California, Berkeley — We establish a new systematic methodology for controlling the water retention of polymer electrolyte membranes. We show that block copolymer membranes with well-defined hydrophilic channels in the 2 to 5 nm range remain moist in a relatively dry environment (relative humidity = 50 %) up to temperatures as high as 90 °C. This retention of water leads to an increase in the overall conductivity with increasing temperature. Simple calculations suggest that capillary condensation is important at these length scales. The morphology of the hydrated membranes is determined by a combination of in-situ neutron scattering and cryogenic electron microscopy.

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