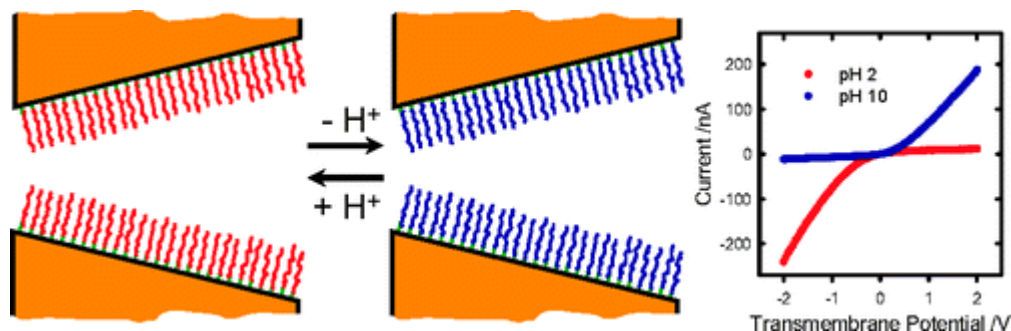


## Single Conical Nanopores Displaying pH-Tunable Rectifying Characteristics. Manipulating Ionic Transport With Zwitterionic Polymer Brushes

Yameen B, Ali M, Neumann R, Ensinger W, Knoll W, Azzaroni O  
*J. AM. CHEM. SOC.*, 2009, **131** (6), 2070-2071



In this work we describe for the first time the integration of “smart” polymer brushes into single conical nanopores to obtain a new highly functional signal-responsive chemical nanodevice. The responsive brushes were constituted of zwitterionic monomers whose charge is regulated via pH changes in the environmental conditions. The pH-dependent chemical equilibrium of the monomer units provides a fine-tuning of the ionic transport through the nanopore by simply presetting the pH of the electrolyte solution. Our results demonstrate that this strategy enables a higher degree of control over the rectification properties when compared to the nanochannels modified with charged monolayer assemblies. We envision that these results will create completely new avenues to build-up “smart” nanodevices using responsive polymer brushes integrated into single conical nanopores.