

# Supporting Information

for

## Water Assisted Proton Transport in Confined Nanochannels

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### Animation

Three animation files, “CNT66-charge\_distribution.mov” (jp0c04493\_si\_002.mov), “CNT77-charge\_distribution.mov” (jp0c04493\_si\_003.mov) and “CNT\_2Gates-charge\_distribution.mov” (jp0c04493\_si\_004.mov), show the evolution of excess protonic charge distribution as a hydrated excess proton transporting into and through a CNT (6,6) ( $d = 0.81$  nm), a CNT (7,7) ( $d = 0.95$  nm), and a “double-gate” CNT nanopores, respectively. These animations, plotted with the hydrated excess proton center of excess charge (CEC) distributions in the axial ( $z^+$ ) and radial ( $r^+$ ) dimensions, use the same scale and color scales with those in Figure 9-I, Figure 9-II, and Figure 14-II, respectively. It is worthy to notice that the animation framerate is arbitrarily set to one frame per  $z^+$  with a uniform interval of 1 frame/0.5 Å, rather than a realistic (or quasi-realistic) framerate that reflects the actual hydrated excess proton diffusion rate.