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Supporting Information

Water Desalination by Electrical Resonance inside Carbon Nanotube

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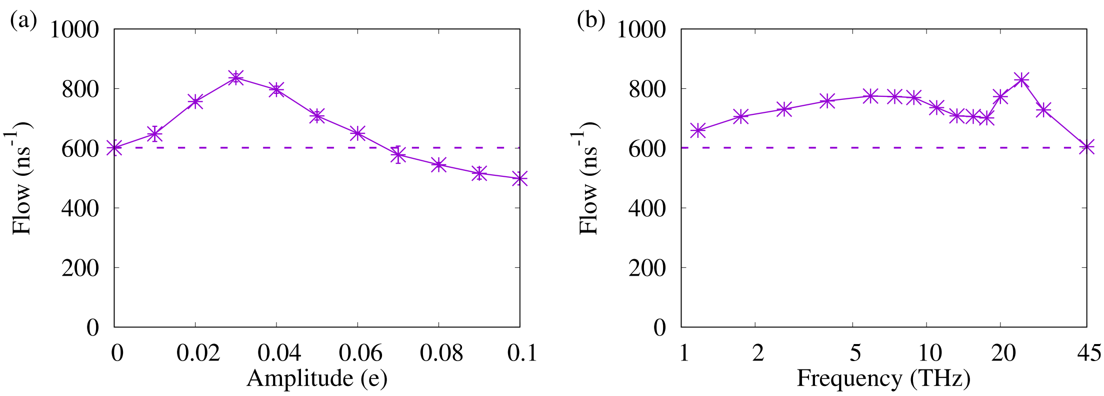

Fig. S 1 (a) Water flow as a function of q_0 when f is fixed at 13.3 THz. (b) Water flow as a function of f when q_0 is fixed at 0.05 e. Dashed lines indicate the value of water flow inside a neutral CNT.

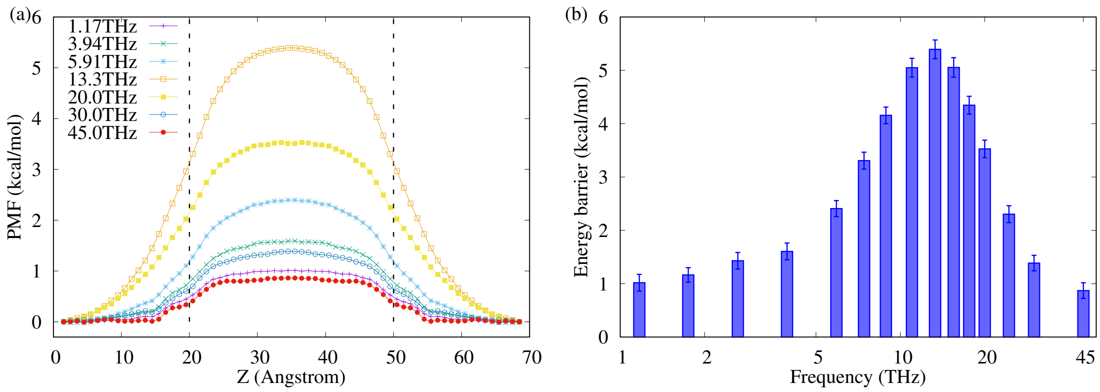

Fig. S 2 (a) PMF of Cl^- when $q_0 = 0.05$ e. (b) Energy barrier of Cl^- as a function of frequency when $q_0 = 0.05$ e. Dotted lines in (a) represent the position of CNT.

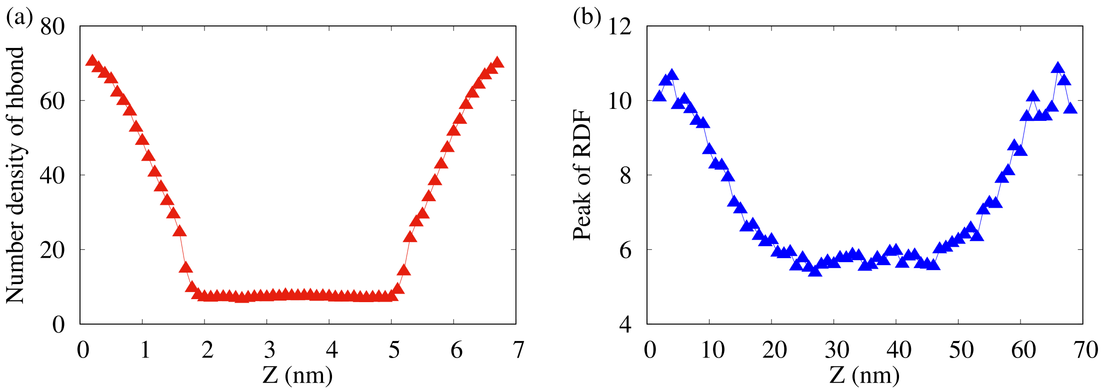

Fig. S 3 (a) Number density of hydrogen bond and (b) peak of RDF as a function of Z in (20,0) CNT with vibrational charge $q_0 = 0.05\ e$ and $f = 13.3\ THz$.

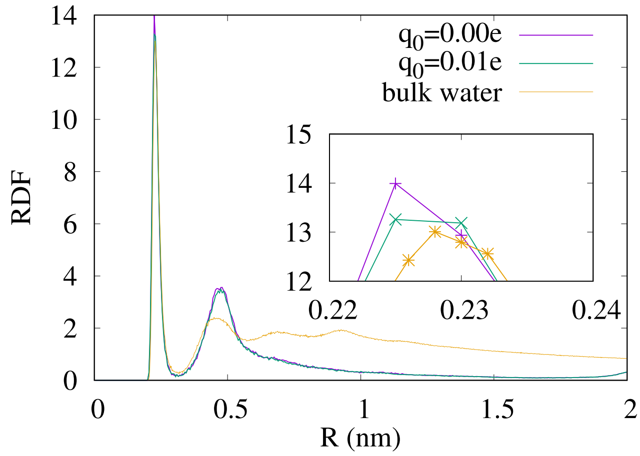

Fig. S 4 RDF of water around Na^+ in the case of $q_0 = 0.00\ e$, $q_0 = 0.01\ e$ and in bulk water. Inert shows a close view around the peak of RDF.

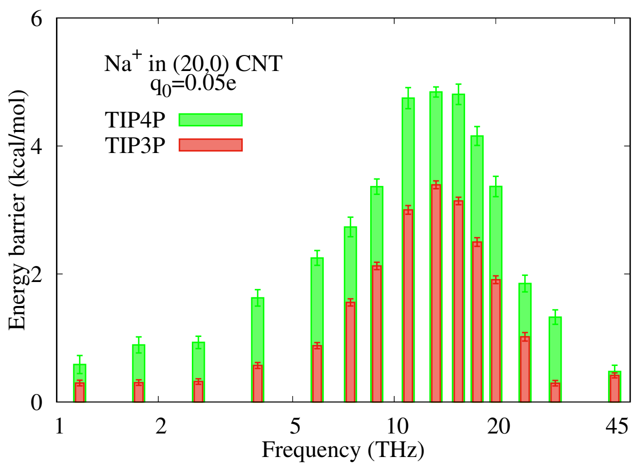

Fig. S 5 Comparison of energy barrier between TIP3P and TIP4P water models.

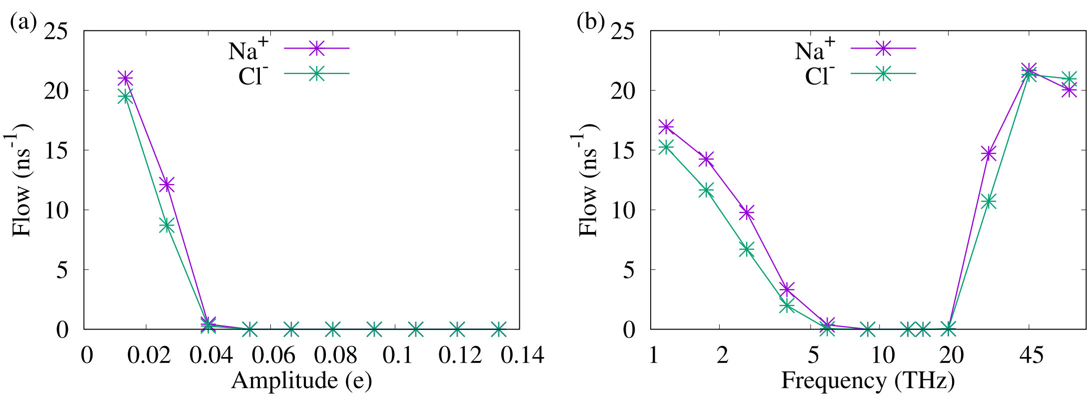

Fig. S 6 (a) Ion flow inside (30,0) CNT as a function of q_0 when f is fixed at 13.3 THz. (b) Ion flow inside (30,0) CNT as a function of f when q_0 is fixed at 0.0667 e.