

## **Description of Additional Supplementary Files**

### **Supplementary Movie 1:**

Molecular dynamics simulation of water and room temperature ionic liquid (RTIL) [pyr14][TFSI], starting from water “randomly mixed” with [pyr14][TFSI], mimics the process of demixing, in which water and RTIL are being separated into two phases.

### **Supplementary Movie 2:**

Molecular dynamics simulation of water and RTIL [BMIM][BF<sub>4</sub>], starting from water “initially separated” from [BMIM][BF<sub>4</sub>], exhibits that water and RTIL spontaneously mix with each other.