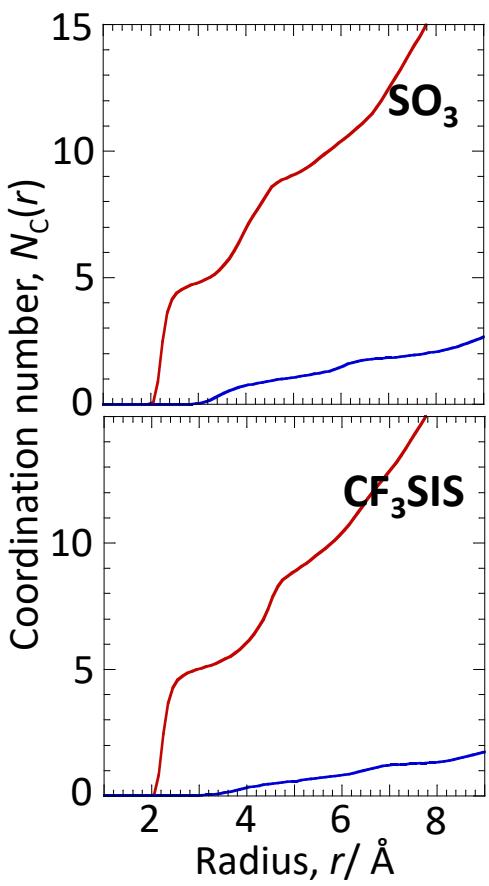
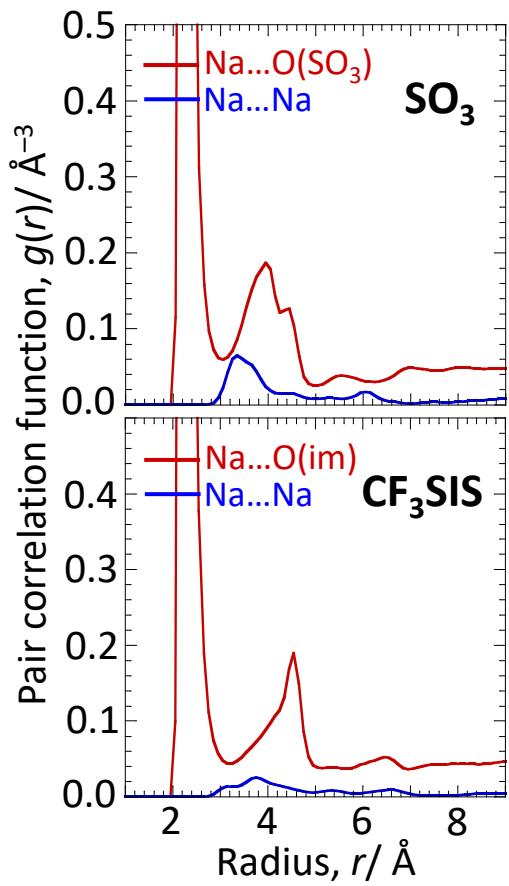


**Supplementary Figure S1. Variable-angle XPS core-level spectra of TFB-X-Na for  $\text{X}=\text{SO}_3$  and  $\text{CF}_3\text{SIS}$ .** Top panel:  $\text{X}=\text{SO}_3$ . Bottom panel:  $\text{X}=\text{CF}_3\text{SIS}$ . Collection sequence: photoemission angle  $\theta = 0^\circ$  (red),  $20^\circ$  (orange),  $40^\circ$  (green),  $60^\circ$  (blue),  $0^\circ$  (purple). Photoemission angle is that between film normal and electron analyzer axis. Excitation,  $\text{Mg K}_\alpha$  (1253.6 eV).



**Supplementary Figure S2. Molecular dynamics simulation of SC *p*-doped TFB-SO<sub>3</sub>-Na and TFB-CF<sub>3</sub>SIS-Na.** Pair correlation function  $g(r)$  and coordination number plots: **(top)** for X=SO<sub>3</sub>, sulfonate O to Na, Na...O(SO<sub>3</sub>) (red) **(bottom)** for X=CF<sub>3</sub>SIS, CF<sub>3</sub>SSI O to Na, Na...O(Im) (red); Na to Na, Na...Na(blue).