

Electronic Support Information

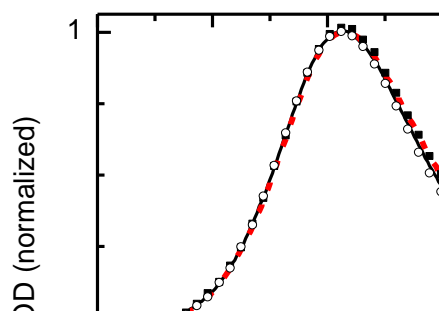


Figure S1. Experimental linear IR spectra. Sodium oxalate (filled squares), potassium oxalate (red line), cesium oxalate (black line) and TMA oxalate (open circles) all at 0.1 M in D₂O.

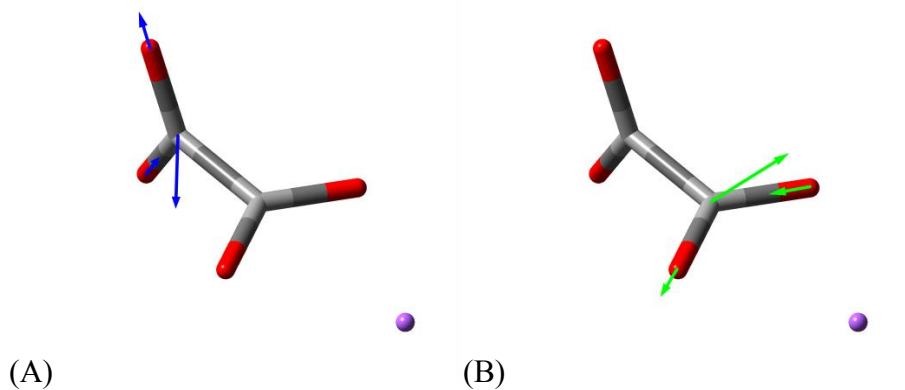


Figure S2. End-on vibrational modes for the conformation of minimum energy. (A) High frequency transition. (B) Low frequency transition.

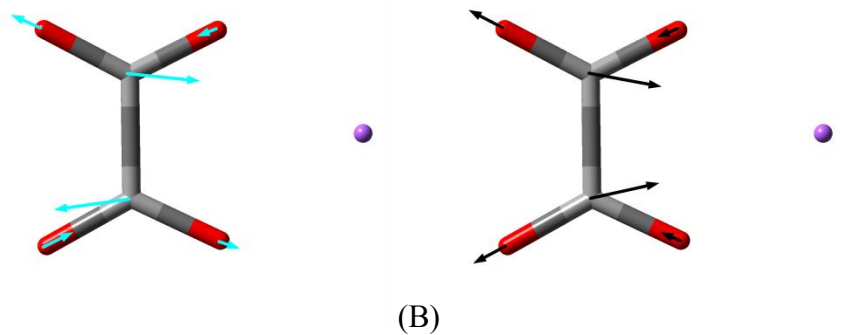


Figure S3. Side-on vibrational modes for the conformation of minimum energy. (A) Transition with negligible transition dipole. (B) Transition with high transition dipole.

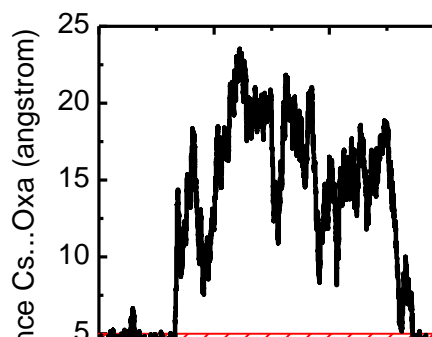


Figure S4. Dynamics of ion pair association. Black line represents the distance between Cs⁺ and the midpoint in the C-C bond and the red shade area represents the limits of a contact ion pair.