CHEM 450/450G HW #10 — Hand-in Concept Solutions

Q18.18

For aqueous solutions, we can assume that, as long as the diffusers are of roughly the same size, we can use $k_d = \frac{8k_BT}{3\eta}$, and, since η = 0.001 Pa s (= 0.001 kg m^{-1} s^{-1}), we calculate that at 300 K, k_d = 1.1×10^{-17} m^3 molecules^{-1} s^{-1} = 6×10^9 s^{-1} M^{-1}. This is pretty typical: something with an order of magnitude of 9-10.

Q19.20

The two factors are λ, the rearrangement energy, and ΔG^o, the thermodynamic difference between the DA and D^+A^- states.