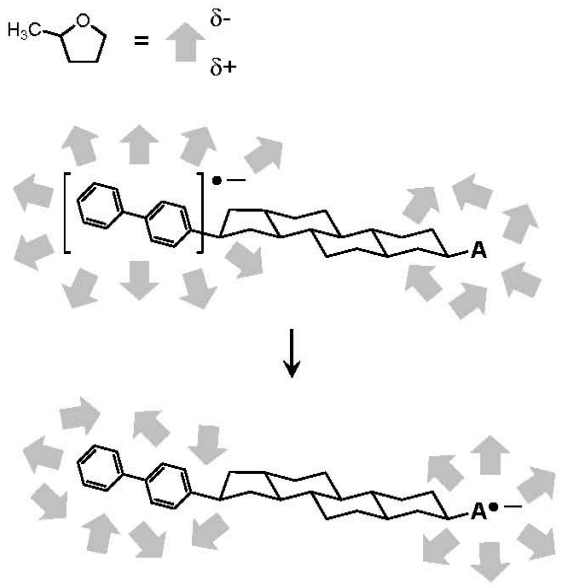
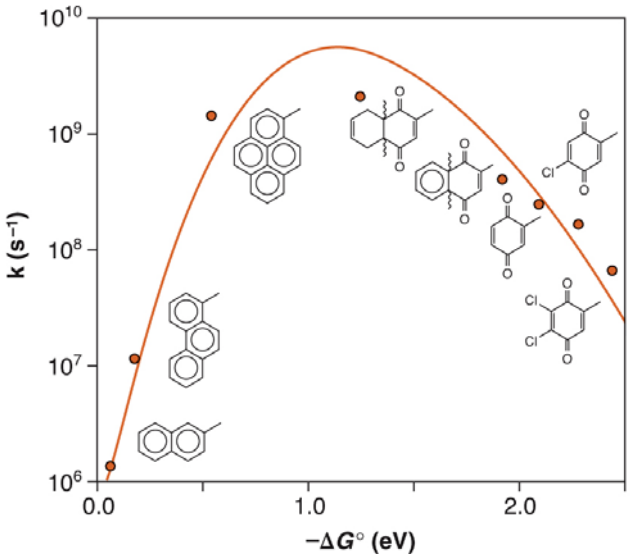
Chemistry 4011/8011 Monday, November 6

Section Question 8

For extremely fast electron transfer reactions, Marcus argued that solvent ordering defined the potential wells described by Marcus Theory. We used that explanation to describe why Closs and Miller's experiments on intramolecular electron transfer could exhibit a "Marcus inverted region".[1]





How might the graph on the right have changed if Closs and Miller had used less-polar octane as the solvent instead of methyltetrahydrofuran? To answer this question, you should draw Marcus parabolae for both solvent cases; how would the solvent ordering and the Marcus parabolae look different for octane than for methyl-THF?

[1] Closs, G. L.; Miller, J. R. *Science* **1988**, *240*, 440.