Figure 1S. Correlation of the experimental rate constants for proton transfer (solid diamonds) and deuteron transfer (solid triangles) with driving force in acetonitrile. Driving force is defined as $-\Delta G$. Solid line – fit of the Lee-Hynes model with $V^{\ddagger}$= 21.5 kcal/mole, E_s=7.0 kcal/mole, ω_Q=199.5 cm^{-1}, reactant stretch = 2645 cm^{-1}, and product bend 768 cm^{-1}.

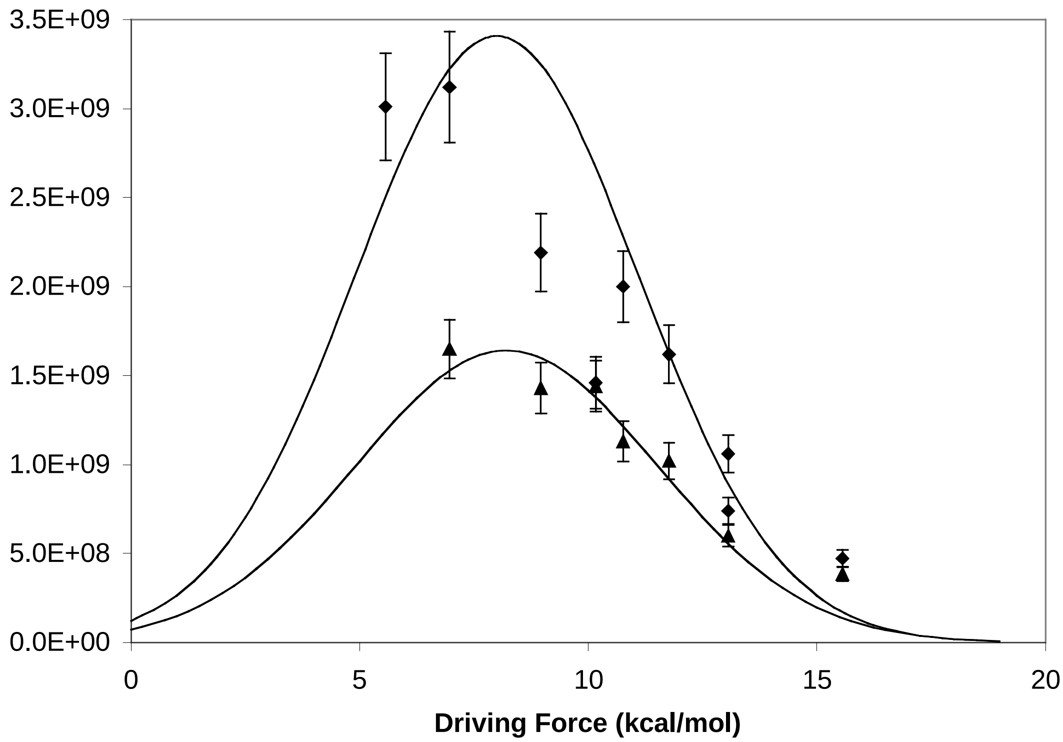

Figure 2S. Correlation of the experimental rate constants for proton transfer (solid diamonds) and deuteron transfer (solid triangles) with driving force in acetonitrile. Driving force is defined as $-\Delta G$. Solid line – fit of the Lee-Hynes model with $V^{\ddagger}$= 22.6 kcal/mole, E_s=6.5 kcal/mole, ω_Q=193.0 cm^{-1}, reactant bend = 1183 cm^{-1}, and product stretch 2386 cm^{-1}.

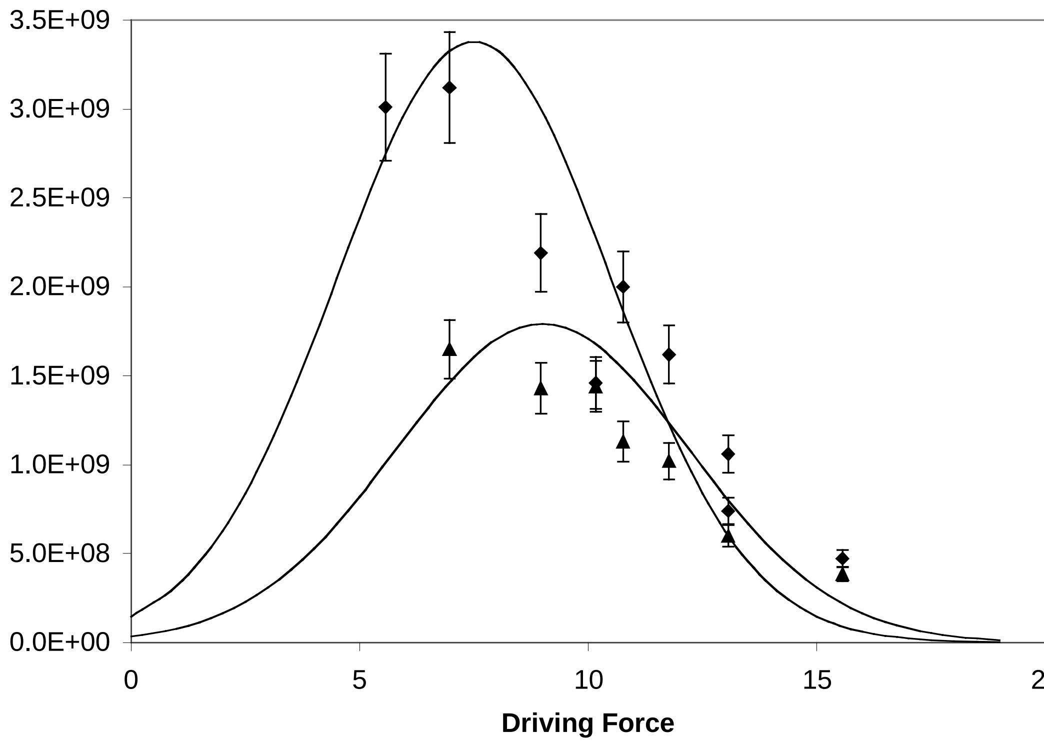

Figure 3S. Correlation of the experimental rate constants for proton transfer (solid diamonds) and deuteron transfer (solid triangles) with driving force in DMF. Driving force is defined as -ΔG. Solid line – fit of the Lee-Hynes model with $V^{\ddagger}$= 26.7 kcal/mole, E_s=7.3 kcal/mole, ω_Q=174.0 cm^{-1}, reactant stretch = 2645 cm^{-1}, and product stretch 2386 cm^{-1}.

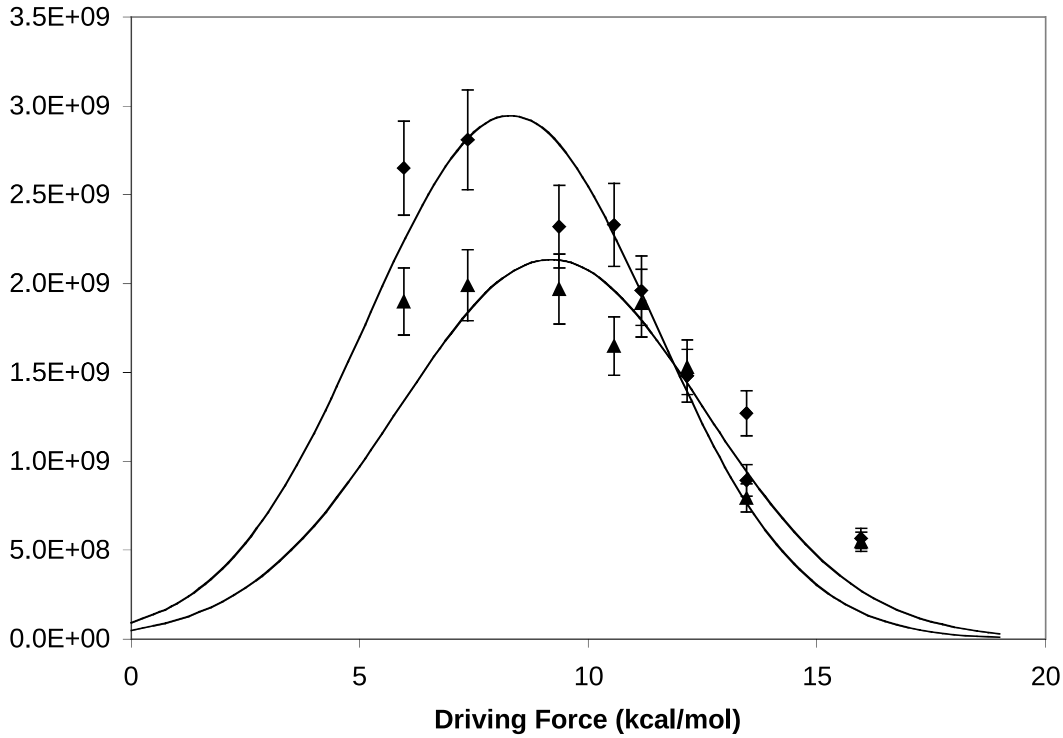

Figure 4S. Correlation of the experimental rate constants for proton transfer (solid diamonds) and deuteron transfer (solid triangles) with driving force in DMF. Driving force is defined as -ΔG. Solid line – fit of the Lee-Hynes model with $V^{\ddagger}$= 22.3 kcal/mole, E_s=7.4 kcal/mole, ω_Q=191.3 cm^{-1}, reactant stretch = 2645 cm^{-1}, and product bend 768 cm^{-1}.

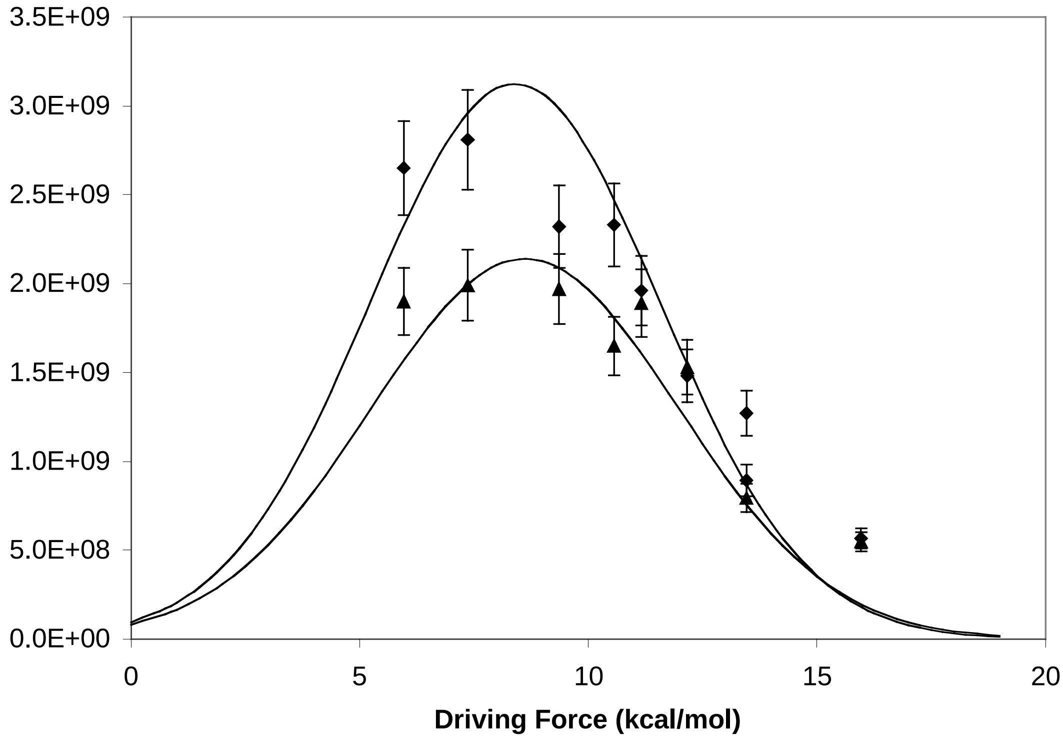

Figure 5S. Correlation of the experimental rate constants for proton transfer (solid diamonds) and deuteron transfer (solid triangles) with driving force in DMF. Driving force is defined as -ΔG. Solid line – fit of the Lee-Hynes model with $V^{\ddagger}$= 23.5 kcal/mole, E_s=7.3 kcal/mole, ω_Q=185.5 cm^{-1}, reactant bend = 1183 cm^{-1}, and product stretch 2386 cm^{-1}.

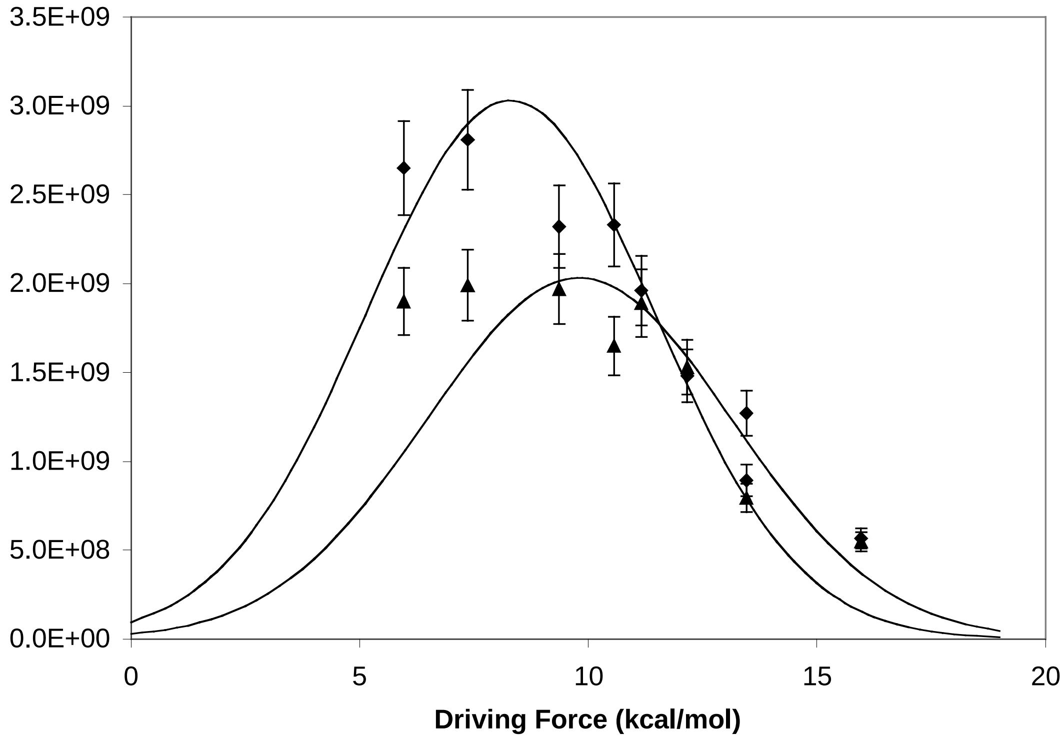

Figure 6S. Correlation of the experimental rate constants for proton transfer (solid diamonds) and deuteron transfer (solid triangles) with driving force in DMF. Driving force is defined as -ΔG. Solid line – fit of the Lee-Hynes model with $V^{\ddagger}$= 19.0 kcal/mole, E_s=7.3 kcal/mole, ω_Q=207.8 cm^{-1}, reactant bend = 1183 cm^{-1}, and product bend 768 cm^{-1}.

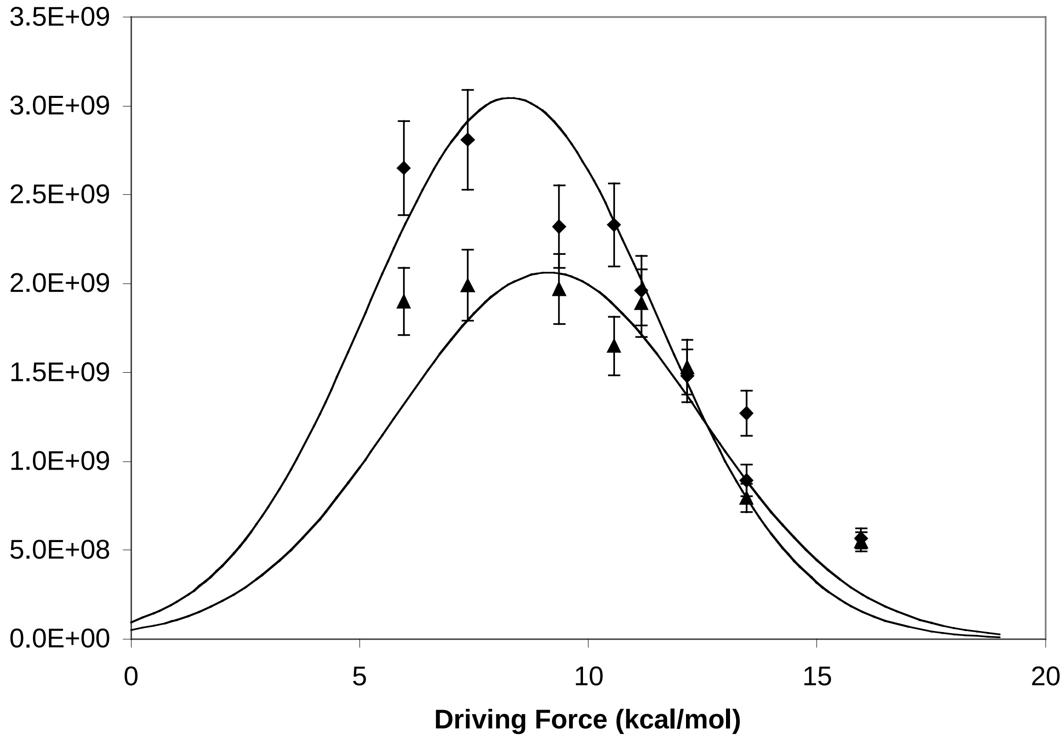

Figure 7S. Correlation of the experimental rate constants for proton transfer (solid diamonds) and deuteron transfer (solid triangles) with driving force in acetonitrile. Driving force is defined as -ΔG. Solid line – fit of the Lee-Hynes model with $V^{\ddagger}$= 18.5 kcal/mole, E_s= 6.1 kcal/mole, ω_Q=215.1 cm^{-1}, reactant bend = 1183 cm^{-1}, and product bend 768 cm^{-1}. ΔQ = 0.01Å

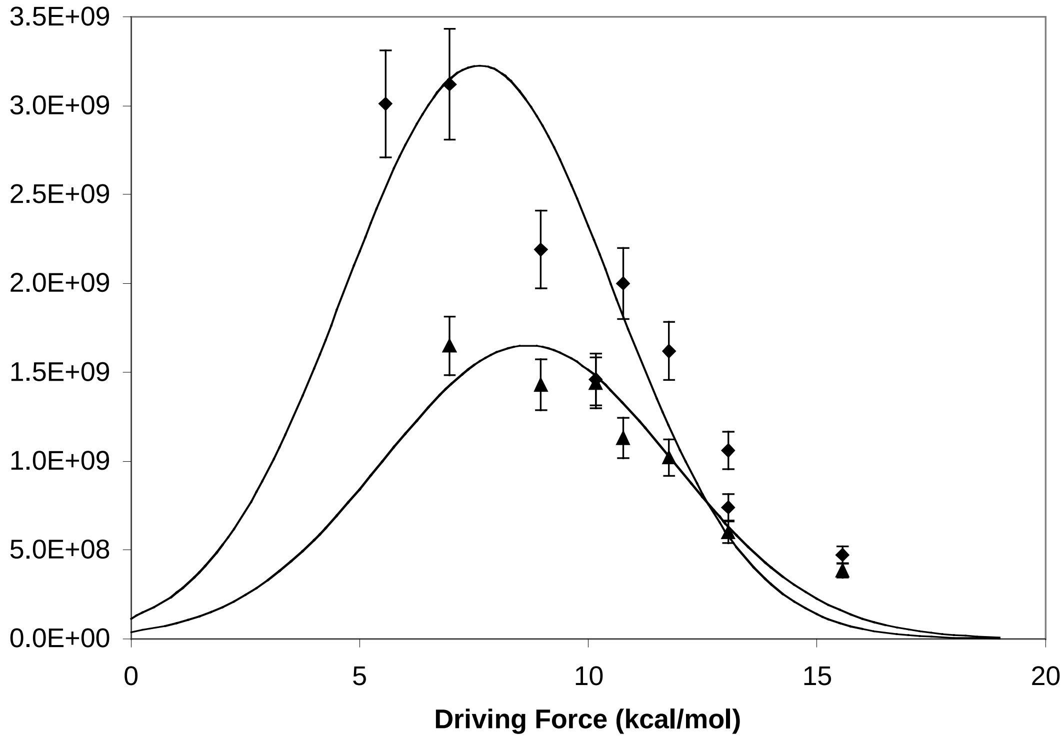

Figure 8S. Correlation of the experimental rate constants for proton transfer (solid diamonds) and deuteron transfer (solid triangles) with driving force in acetonitrile. Driving force is defined as -ΔG. Solid line – fit of the Lee-Hynes model with $V^{\ddagger}$= 18.7 kcal/mole, E_s=3.0 kcal/mole, ω_Q=215.0 cm^{-1}, reactant bend = 1183 cm^{-1}, and product bend 768 cm^{-1}. ΔQ = 0.05Å