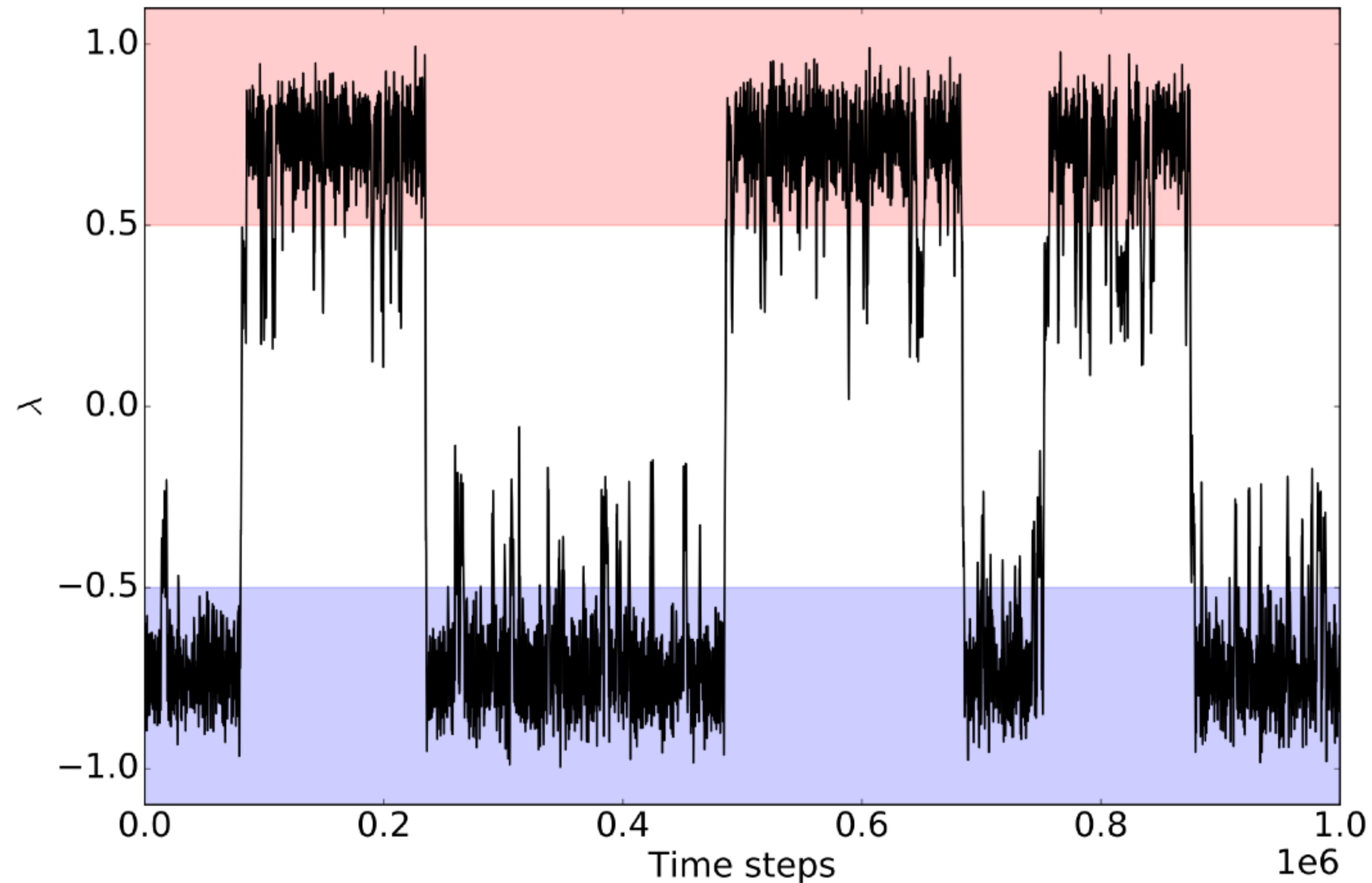
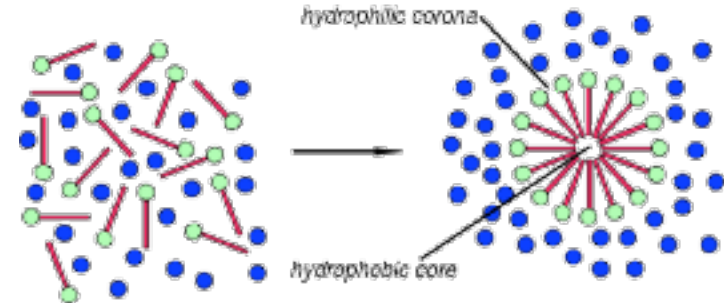
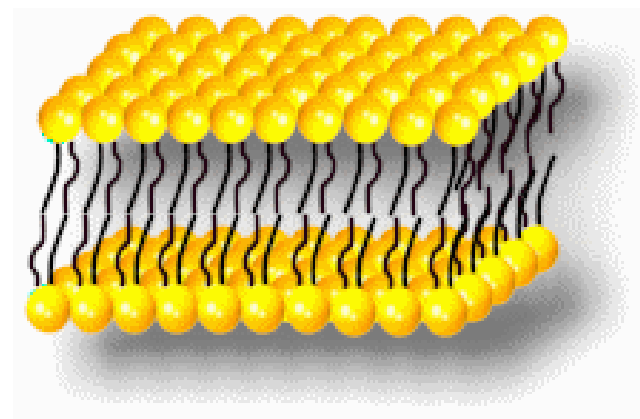
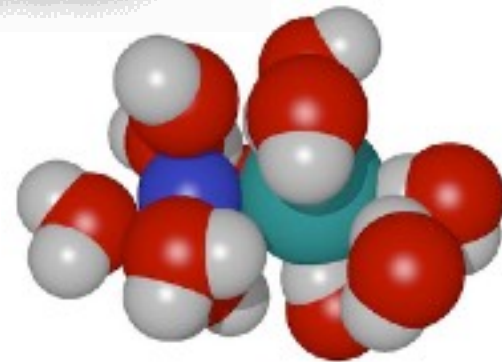
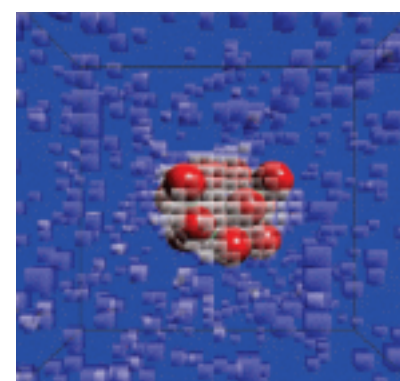
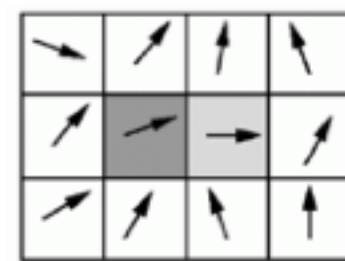
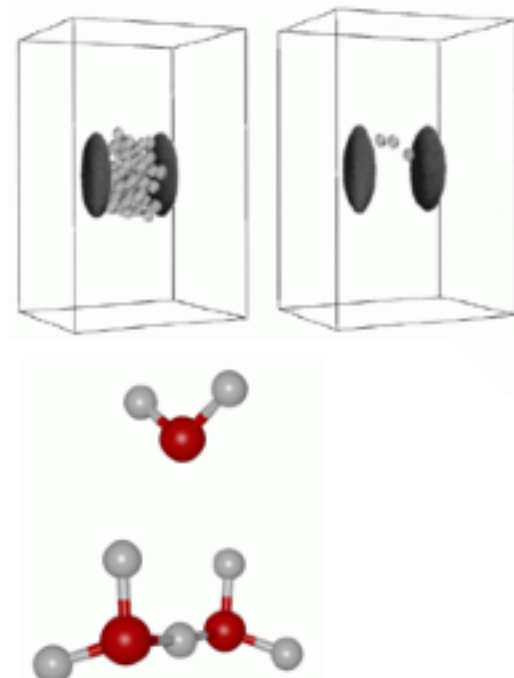
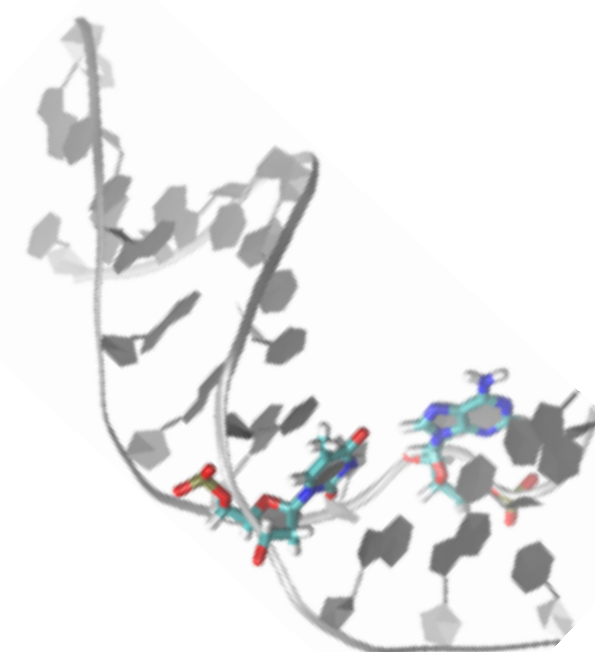
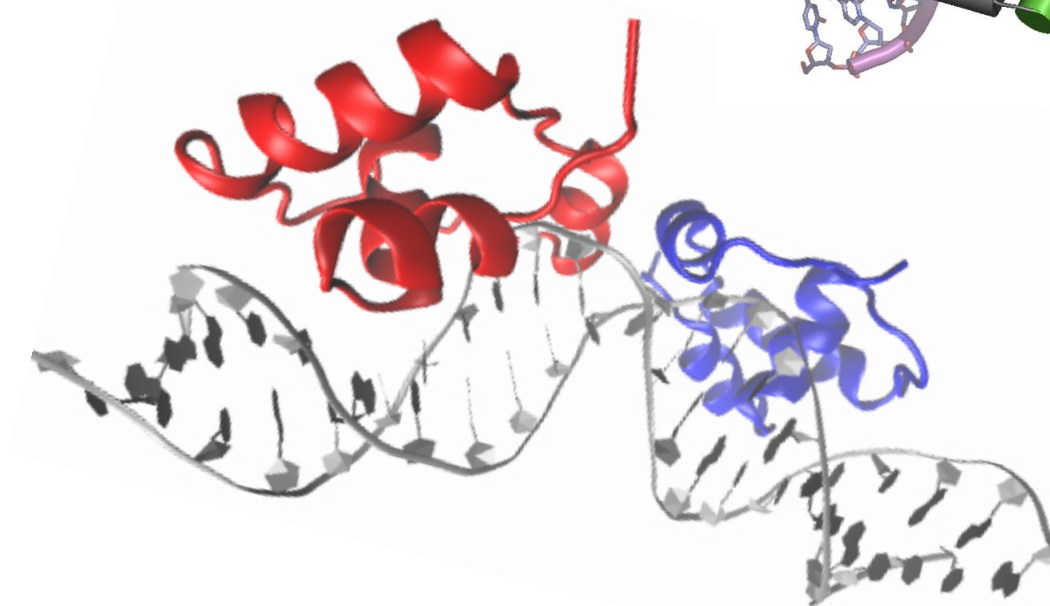
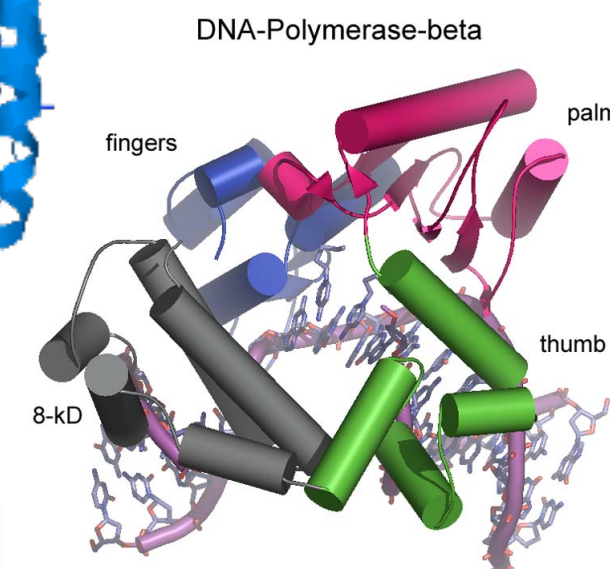
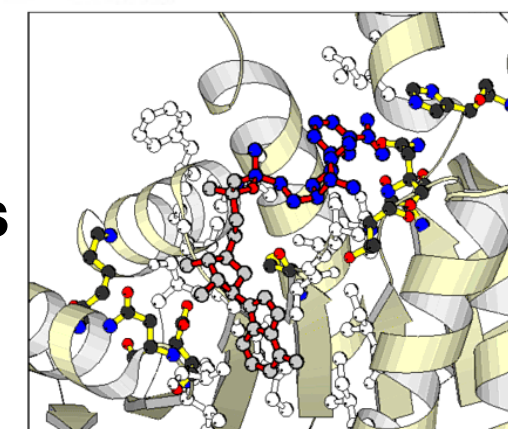
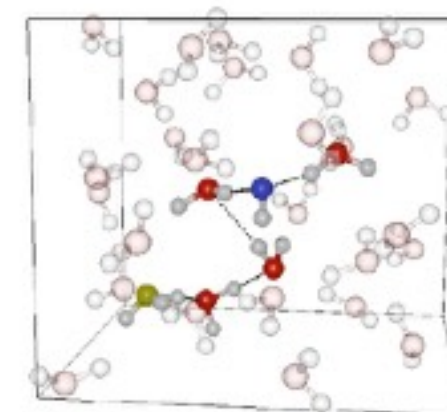
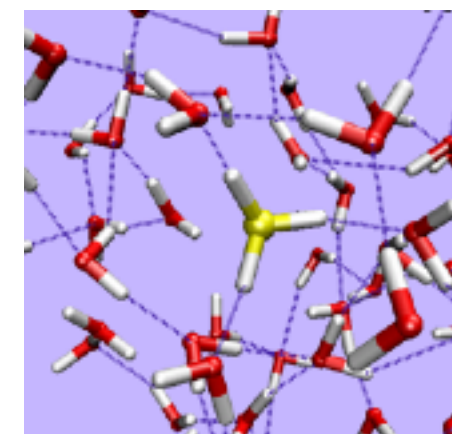
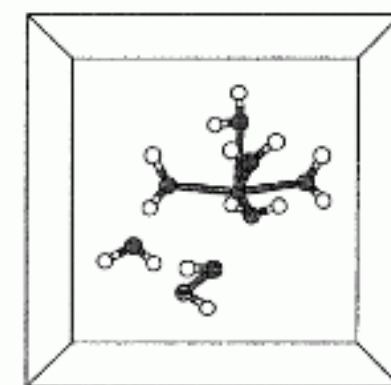
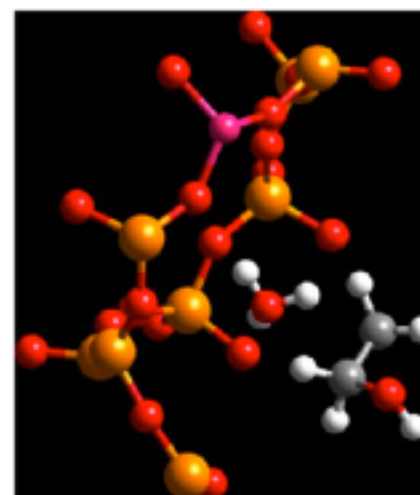
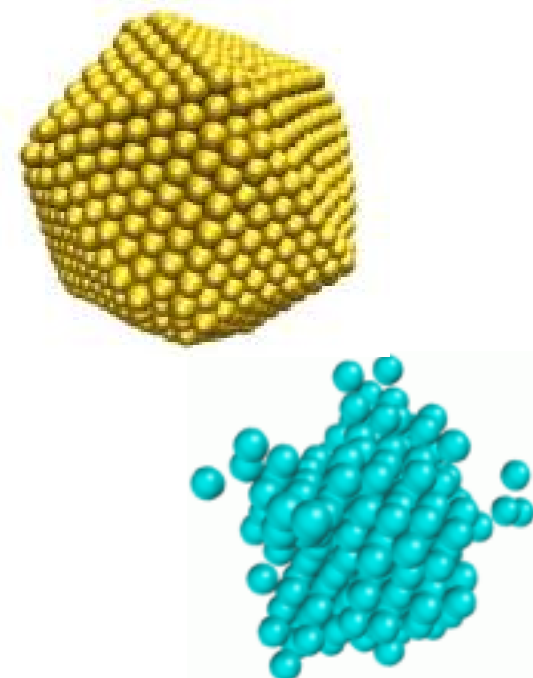
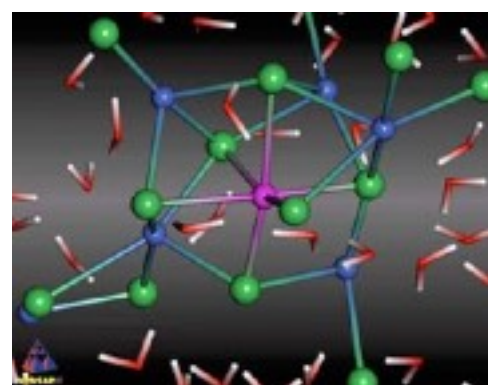


# What makes an event “rare”?



Biomolecular Systems:  $\sim 1/\text{ms}$  is common  
Requires  $10^{12}$  time steps of  $\sim 1$  fs



# RARE EVENTS

crystallization &  
self-assembly

catalysis

reactions

enzyme reactions

folding & binding

conformational changes

solvent effects

complex  
fluids