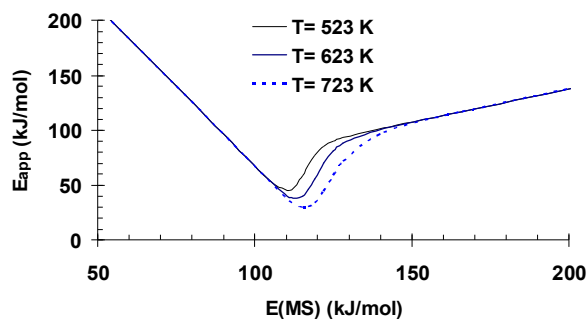


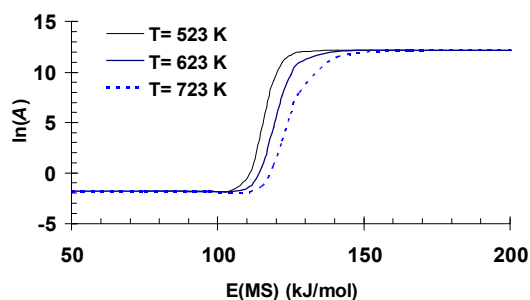
SUPPORTING INFORMATION

S1: Determination of the apparent activation energies, prefactor and Constable plot as a function of temperature

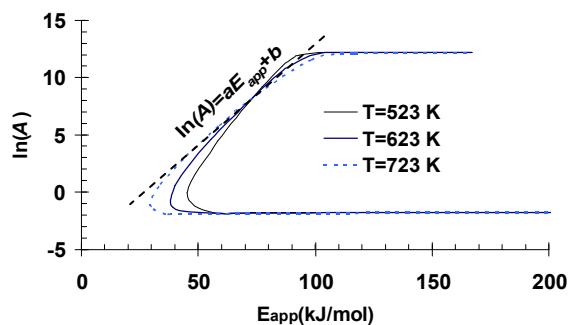
a)



b)



c)



As expected, we show in Figure a) that an increase of temperature leads to a decrease of the apparent activation energies whatever the value of $E(MS)$. Moreover, the minimum is shifted towards higher $E(MS)$ values. Following the Le Chatelier principle, an increase of T induces a depletion of the reactive species from the catalytic surface and thus, the optimal catalyst will be the one counteracting this effect, i.e. a catalyst with higher $E(MS)$. In contrast, the apparent prefactor decreases as a function of T for a given $E(MS)$.

In Figure c) the compensation effect is highlighted as a function of T : the calculated value of a is close to $1/RT$ and thus directly depend on T variation.