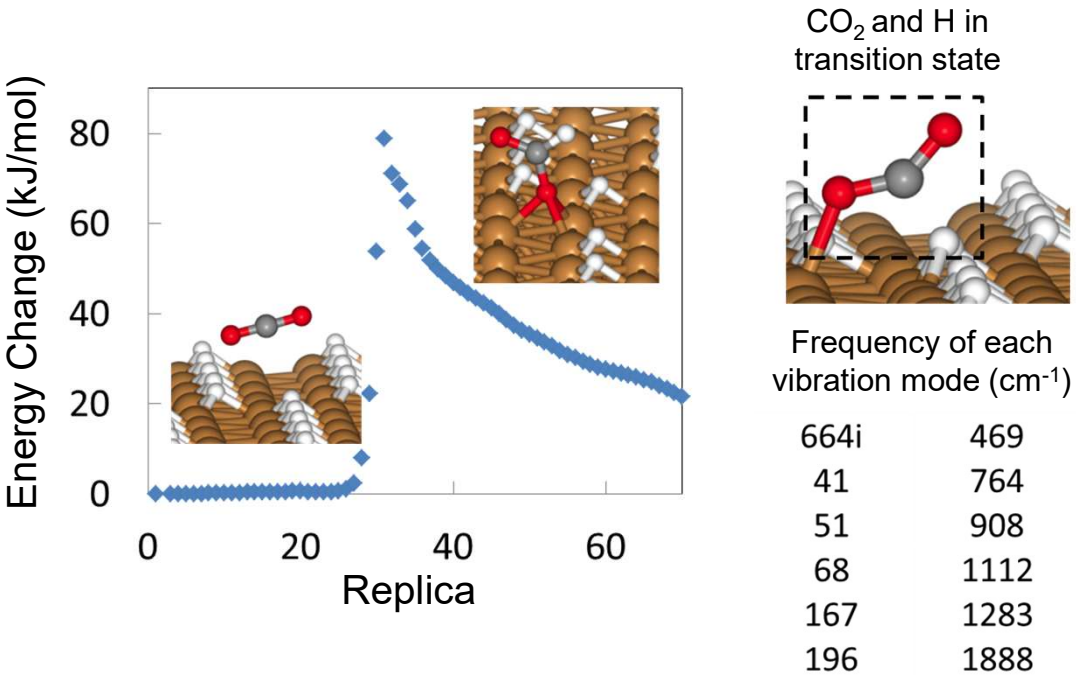

Fig.1. Reaction energy pathway for H and CO_2 adsorbed on Cu(111) (left) and vibrational frequency of each vibration mode in transition state (right)

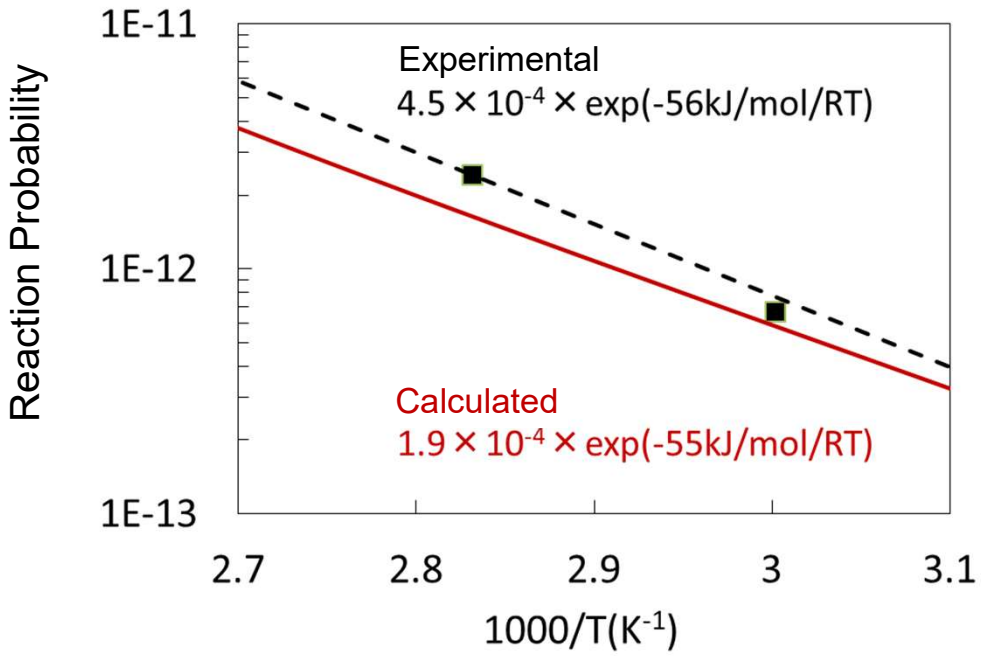

Fig.2. Temperature dependence of reaction probability for E-R type reaction of H and CO_2 adsorbed on Cu(111)