

In most heterogeneously catalysed reaction at least two reactants interact with a solid surface simultaneously. It is important to unravel the influence of adsorbates on the dynamics of adsorption and dissociation of other species from gas-phase. The influence of pre-adsorbed CO on the dissociative adsorption of D<sub>2</sub> on Ru(0001) has been studied using molecular beam techniques. We have determined the initial dissociation probability of D<sub>2</sub> as a function of its kinetic energy for various CO pre-coverages ranging between 0 and 2/3 ML at a surface temperature of 180 K. The results indicate that CO blocks the D<sub>2</sub> dissociation and that it perturbs the local surface reactivity up to the nearest neighbouring Ru atoms.