

## The Adsorption and Decomposition of NO on a Stepped Pt(111) Surface

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### Abstract

The adsorption and decomposition of NO on a stepped Pt(111) surface have been studied using thermal desorption spectroscopy and Auger electron spectroscopy. NO adsorbs molecularly in two different states of the terrace and the step, which are distinguishable in thermal desorption spectra. NO dissociates via a bent species at the step sites on the basis of vibrational spectrum data reported previously.

The dissociation of NO is an activation process : the activation energy is estimated to be about 2 kcal/mol. Increase in the NO dissociation with adsorption temperature is explained by a process controlled by diffusion of the dissociated atomic nitrogen from the step to the terrace of the surface.

In addition to NO and N<sub>2</sub>, the desorption peak of N<sub>2</sub>O is observed. We conclude that the formation of N<sub>2</sub>O is attributed to surface reaction of NO and N adsorbed on the surface.