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TEMPERATURE PROGRAMMED DESORPTION OF WEAKLY BOUND ADSORBATES ON AU(111)

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ABSTRACT

We have performed temperature programmed desorption (TPD) experiments to analyze the desorption kinetics of Ar, Kr, Xe, C_2H_2, SF_6, N_2, NO and CO on Au(111). We report desorption activation energies (E_{des}), which are an excellent proxy for the binding energies. The derived binding energies scale with the polarizability of the molecules, consistent with the conclusion that the surface-adsorbate bonds arise due to dispersion forces. The reported results serve as a benchmark for theories of dispersion force interactions of molecules at metal surfaces.