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TECHNICAL REPORT No. 6

STICKING PROBABILITY OF H_2 AND HD ON NOBLE METAL SURFACES

by

M.D. Stiles and J.W. Wilkins

Prepared for Publication

in

Physical Review Letters

Laboratory of Atomic and Solid State Physics
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Sticking Probability of H_2 and HD on Noble Metal Surfaces

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Ithaca, NY 14853

One-phonon distorted-wave Born approximation calculations of the energy-dependent phonon-assisted sticking coefficients of H_2 and HD at smooth metal surfaces yield peaks in the sticking coefficient as a function of energy due to selective adsorption resonances, the peaks being strong for HD and weak for H_2. Furthermore the calculation does not explain the observed[1] dependence of the sticking coefficient of H_2 on the rotational populations.

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