Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Step-up versus "Step-down" scattering asymmetry in the charge transfer of H^- on free-electron vicinal metallic surfaces[1] BOYAN OBRESHKOV, UWE THUMM, Kansas State University — We present numerical results based on a wave-packet propagation study of the one-electron charge transfer between hydrogen anions and free-electron vicinal metallic surfaces [1]. An effective potential for the motion of the active electron is derived from Thomas-Fermi-von Weizsäcker theory, extended to include the image charge effects. The ion-survival probability near the surface is evaluated from a rate equation for projectiles that are incident with a kinetic energy of 50 eV. We find an enhancement of the electron loss near the steps of the surface, caused by the Smoluchowski effect. As a consequence, depending on the orientation of the surface steps, the ion- survival is more likely if the projectiles approach steps from above [2].

[1] B. Obreshkov and U. Thumm, Phys. Rev. A **74**, 012901 (2006).
[2] B. Obreshkov and U. Thumm, Surf. Sci., in press.

[1]Supported by NSF and the Division of Chemical Sciences, Office of Basis Energy Sciences, Office of Energy Research, US DoE.

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Date submitted: 22 Nov 2006 Electronic form version 1.4