

Charge Changing Collision Cross Sections of Tungsten Ions

Alex M Imai^a, Y. Ohta^a, Y. Iriki^a and A. Itoh^a

^a*Department of Nuclear Engineering, Kyoto University, Yoshida, Sakyo, Kyoto 606-8501, Japan.*

Abstract. We have measured electron capture cross sections for W^+ and W^{2+} ions colliding with He, Ne, Ar, Kr, H_2 , D_2 , N_2 , CH_4 , C_2H_6 , and C_3H_8 atoms and molecules at collision energy between 5 and 15 keV. Measured cross sections show power-law dependence on the target first ionization potential, as have been demonstrated in collisions of light or medium-heavy element ions of Be, B, C, Fe, Ni and so on, implying a possibility that electron capture for heavy and “warmly-clothed” ions might be understood as distant collisions of potential particle with neutral targets. Electron capture cross sections for H_2 , D_2 , and He targets are compared with theoretical calculations based on the hidden crossing method and remarkable threshold behavior on collision energy will be discussed. Our new plan for producing ionization, electron capture and loss cross sections for $H + W^{q+}$ collisions at NBI energy (up to 1 MeV/u) will also be presented.