Supplementary Information

Strong Spin-Orbit Interaction induced by Transition Metal Oxides at the Surface of Hydrogen-terminated Diamond

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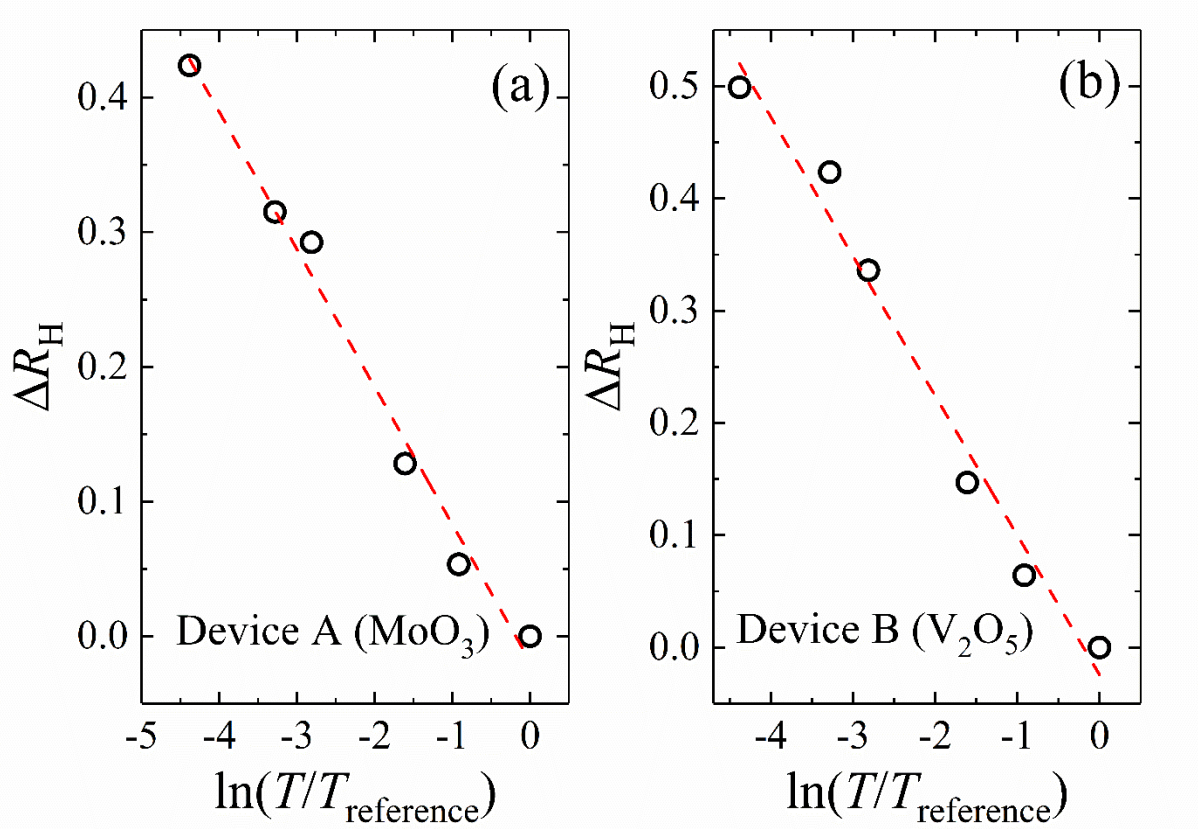

Figure S1. ΔR_H plotted as a function of temperature, showing logarithmic dependence on T for: (a) Device A (MoO_3) and (b) Device B V_2O_5. The fitting slopes here suggest the initial values of K_{HH}

According to the works achieved by Goh *et al.* [1], K_{HH} is a factor in the ln(T) dependence of the HHI correction, ∂R_H, to the Hall resistance R_H as well. In the work, we replaced the ∂R_H by $\Delta R_H = [R_H(T) - R_H(20\ K)]/R_H(20\ K)$ under the assumption that the Hall resistance approaches the Drude limitation at 20 K. Then the first approximation of K_{HH} is given by the slope of ΔR_H vs. ln(T/20 K), as shown in Figure S1.

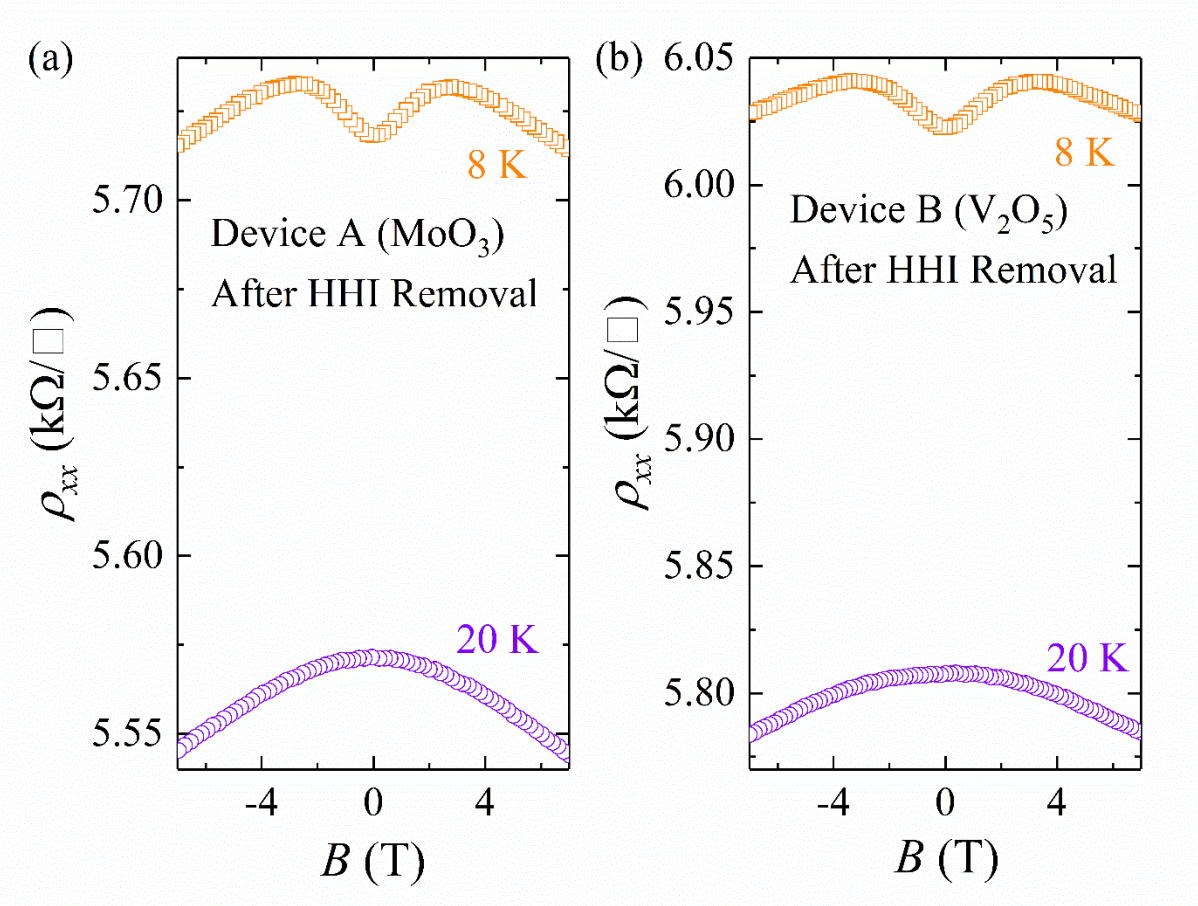

Figure S2. $\rho_{xx}(B)$ after HHI removal at 8 K and 20 K for: (a) Device A (MoO_3), (b) Device B (V_2O_5).

Reference

[1] K.E.J. Goh, M.Y. Simmons, A.R. Hamilton, Electron-electron interactions in highly disordered two-dimensional systems, Phys. Rev. B - Condens. Matter Mater. Phys. 2008; 77(23): 235410-1–9.