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The imprint of transition metal d-orbitals on a graphene Dirac cone: A Raman investigation QIN ZHOU, SINISA COH, MARVIN COHEN, STEVEN LOUIE, A. ZETTL, Univ of California - Berkeley — We investigate the influence of SiO2, Au, Ag, Cu, and Pt substrates on the Raman spectrum of graphene. Experiments reveal particularly strong modifications to the intensity, position, width, and shape of the Raman signal of graphene on platinum, compared to that of suspended graphene. The modifications also strongly depend on the relative orientation of the graphene and platinum lattices. Surprisingly, the interaction between graphene and platinum is often considered as weak Van der Waals interaction. We theoretically investigates the observations from electromagnetic shielding, charge transferring and from hybridization of electronic states in graphene and platinum.

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