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Electronic structure modification of graphene on d-band metal surfaces and its Raman signature[1] SINISA COH, QIN ZHOU, ALEX ZETTL, MARVIN L. COHEN, STEVEN G. LOUIE, UC Berkeley Physics Department, Lawrence Berkeley National Laboratory — We find strong modifications of the graphene electronic structure when it is placed on a platinum surface. Additionally, these modifications strongly depend on the relative orientation of the graphene and platinum lattices. We expect that the same will occur whenever graphene is brought in contact with a surface of a material that has d-orbital close to the Fermi level. We demonstrate experimentally and theoretically that these modifications leave a distinct signature in the Raman spectrum of graphene. Out of two prominent graphene Raman peaks, one is unaffected (the G peak) while the other (the 2D peak) is severely affected, in proportion with the modification of the graphene electronic structure.

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