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Electronic inhomogeneities of epitaxial graphene on Ru(0001) probed by dynamic STM and STS measurements ANDRES CASTELLANOS-GOMEZ, BOGDANA BORCA, SARA BARJA, MANUELA GARNICA, AMADEO VÁZQUEZ DE PARGA, RODOLFO MIRANDA, GABINO RUBIO-BOLLINGER, NICOLAS AGRAIT, Departamento de Física de la Materia Condensada, Universidad Autónoma de Madrid, Spain — Epitaxial growth of graphene on Ru(0001) surfaces is a powerful route to obtain wafer-scale graphene layers. Nevertheless the graphene-Ru(0001) interaction is expected to play an important role in electronic and chemical properties of the grown graphene layer. We have performed dynamic scanning tunneling microscopy (dyn-STM) and scanning tunneling spectroscopy (STS) at temperatures down to 300 mK on graphene epitaxialy grown on Ru(0001). We have found that both the local tunneling barrier height (LBH) obtained from the dyn-STM measurements and the local density of electronic states (LDOS) deduced from the STS measurements show a Moiré-like distribution. This inhomogeneity on the electronic properties of graphene on Ru(0001) is induced by local variations of the carbon – ruthenium interaction due to the lattice mismatch between the graphene and the Ru(0001) lattices.

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