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UHV electron-probing of micro-mechanically cleaved Graphene on SiO_2 K.R. KNOX, S. WANG, P. KIM, R.M. OSGOOD, Columbia University, T.O. MENTES, M.A.N ORTI, A. LOCATELLI, Elettra Trieste Italy, D. CVETKO, A. MORGANTE, TASC-INFM Trieste Italy — While graphene's distinctive Dirac-cone electronic structure and simple 2D atomic structure have attracted major interest in the physics community, the inherent limitations of isolated graphene samples mounted on an insulating substrates have made it difficult to study such systems with typical UHV probes such as photoemission and low energy electron diffraction (LEED). While most single layer graphene transport measurements are done on micro-mechanically extracted samples on SiO_2, all photoemission and LEED measurements of graphene performed so far have used films grown on SiC substrates. In this talk, we will discuss the first results of UHV probes carried out exfoliated graphene bonded to SiO_2. Using the high spatial resolution of the nanospectroscopy beamline at the ELETTRA synchrotron light source, we have been able to overcome the size limitations, which have prevented previous UHV study of this system. We will discuss the results of our X-ray photoemission (XPS), UV photoemission (UPS) and LEED measurements on single and multilayer graphene samples.

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