Abstract Submitted
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Spectra of electrons emitted as a result of the sticking and annihilation of low energy positrons to the surfaces of graphene and highly oriented pyrolytic graphite (HOPG)[1] M CHRYSLER, V CHIRAYATH, A MCDONALD, Z LIM, K SHASTRY, R GLADEN, A FAIRCHILD, A KOYMEN, A WEISS, University of Texas at Arlington — Positron annihilation induced Auger electron spectroscopy (PAES) was used to study the positron induced low energy electron spectra from HOPG and a sample composed of 6-8 layers of graphene grown on polycrystalline copper. A low energy (˜2eV) beam of positrons was used to implant positrons into a surface localized state on the graphene and HOPG samples. Measurements of the energy spectra of the positron induced electrons obtained using a TOF spectrometer indicate the presence of an annihilation induced KLL C Auger peak (at ˜263 eV) along with a narrow low energy secondary peak due to an Auger mediated positron sticking (AMPS) process. A broad spectral feature was also observed below ˜15 eV which we believe may be due to a VVV C Auger transition not previously observed. The energy dependence of the integrated intensity of the AMPS peak was measured for a series of incident positron kinetic energies ranging from ˜1.5 eV up to 11 eV from which the binding energy of the surface localized positron state on graphene and HOPG was estimated. The implication of our results regarding the applicability of AMPS and PAES to the study of graphene surfaces and interfaces will be discussed.

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