We studied the electronic structure of HOPG, multilayer Graphene and other sp² hybridized carbon systems with resonant photoemission. X-ray based measurements were done at the U49/2-PGM2 beam line at BESSYII in Berlin. Above the K-edge the resPES data are dominated by the Auger process causing a C2p4 final state. The Auger lines appear at constant kinetic energy (spectator, 2h) or constant binding energy (participant, 1h). For the features right at the resonance we observe a different Auger decay mechanism. We attribute it to the decay out of an excitonic intermediate state with a very long lifetime. It involves three hole states in which the original primary core hole is filled by a Valence Auger decay which occurs while the excited electron rests in the excitonic intermediate state. It decay later and its energy is determined by the screening of the valence holes and no longer of its primary hole. We discuss the spectral features of such triple hole – triple electron Auger -Exciton decays in detail which are found only close to resonance and only in the localized valence states of excitonic excitation i.e. C1s – π* transitions [1, 2, 3].