We investigated the electronic structure of the valence and conduction band of HOPG by 2D resonant photoemission spectroscopy. Our aim is to understand the electronic structure of defects and inhomogeneities in graphene and related materials in more detail. From our measurements we find that the transition from the $\sigma$-band to the $\pi^*$-band at the M-point shows a characteristic Fano-Profile. A Fano-Profile occurs as the result of the interference of the band to band transition and a parallel transition to a discrete energy level within the band gap. The theory of Fano enables us to determine the energetic location of these discrete level. It is found to be several meV above the Fermi-Energy. Additional measurements on graphene flakes lead to similar results for the $\sigma$- to $\pi^*$-band transition and the location of the discrete energy state. With this we not only can determine the energetic states of defects but also get a better understanding of the origin of the Fano profile which is a particular detail of the resonant absorption process.