Abstract: Sub-molecular resolution imaging is now commonplace in scanning tunnelling microscopy. The fullerene family of molecules has been particularly important in this regard and a number of groups have reported the observation of intramolecular features arising from the orbital structure of, for example, C$_{60}$ adsorbed on metal and semiconductor surfaces [1]. The elegant experiments of Gross et al. [2] showed that imaging of molecular structure with resolution significantly higher than that achievable in conventional STM is possible using qPlus atomic force microscopy. Prior to this, Giessibl’s group had pioneered “sub-atomic” resolution imaging [3], where spatially localized surface orbitals are used to image tip structure. I will show that it is possible to exploit the relatively narrow spatial extent of dangling bond orbitals on the Si (111)-(7x7) surface to image the orbital structure of a C$_{60}$ molecule adsorbed on a tip. After the transfer of a single C$_{60}$ molecule from the (7x7) surface to the tip, subsequent dynamic STM measurements yielded images where the silicon adatoms each show sub-molecular features (see figure, top row) arising from the charge density distribution of the transferred C$_{60}$ molecule. The size and the shape of the molecular orbitals vary with the adsorption and rotation angle of the C$_{60}$ on the tip. In addition, qPlus AFM imaging reveals high resolution of intramolecular structure (see figure, bottom row). The force of interaction between the on-tip adsorbed C$_{60}$ molecule and silicon surface has also been measured using qPlus AFM frequency shift-vs-tip displacement spectroscopy.