Para-sexiphenyl (p-6P) has attracted considerable interest as a promising candidate for future organic opto-electronic applications. Its molecular structure consists of a linear chain of six linked benzene rings showing strong $\pi$ bond delocalization in the direction of the chains. Previous research shows that the optical absorption of p-6P films is chain-orientation dependent. On the other hand, Reflectance Difference Spectroscopy (RDS) has been demonstrated to be a powerful tool to measure the optical anisotropy at normal incidence. Here, we present a RDS investigation of para-sexiphenyl thin film growth on Cu(110) and Cu(110)-(2x1)O. The RDS spectra show pronounced anisotropies of the p-6P films formed on both substrates at room temperature, which indicates preferential orientation of p-6P molecules on the two atomically well defined substrates: On Cu(110), the p-6P molecular chains align in the [1 0] direction, i.e., along the Cu atomic rows, while on the Cu(110)-(2x1)O surface, the molecules align in the orthogonal [001] direction, i.e., along the Cu-O rows formed on Cu(110). Additionally, the evolution of the RDS signal at different photon energies during growth provides detailed information about the growth mode of p-6P on both substrates.