

Supporting Information for

Excited-State Dynamics of Carbazole and *tert*-Butyl-Carbazole in Thin Films

*Konstantin Moritz Knötig, Domenic Gust, Kawon Oum and Thomas Lenzer **

Physical Chemistry 2, Department Chemistry and Biology, Faculty IV: School of Science and
Technology, University of Siegen, Adolf-Reichwein-Str. 2, 57076 Siegen, Germany
Correspondence: lenzer@chemie.uni-siegen.de

Table of Contents

1. X-Ray Diffraction Experiments.....	S2
2. Absorption Spectrum of a PMMA Thin Film.....	S3

1. X-Ray Diffraction Experiments

Figures S1 and S2 show the X-ray diffraction data and simulations for neat Cz and *t*-Bu-Cz thin films, respectively. Cz crystallizes in the orthorhombic space group *Pnma* (no. 62), whereas *t*-Bu-Cz belongs to the monoclinic space group *C2/c* (no. 15). In both cases, the diffraction patterns show a strong texture, with the *a*-*c* plane oriented parallel to the quartz substrate. Our simulations provide $a = 7.54(8) \text{ \AA}$, $b = 19.144(2) \text{ \AA}$, $c = 5.71(9) \text{ \AA}$ and $\alpha = \beta = \gamma = 90^\circ$ for Cz, as well as $a = 46.1(7) \text{ \AA}$, $b = 6.33(16) \text{ \AA}$, $c = 26.37(6) \text{ \AA}$, $\alpha = \gamma = 90^\circ$, $\beta = 112.613^\circ$ (fixed) for *t*-Bu-Cz, both in satisfactory agreement with literature data [50,51,61], given the fact that there are only a few reflexes visible in our diffraction patterns due to the preferential growth of the crystallites.

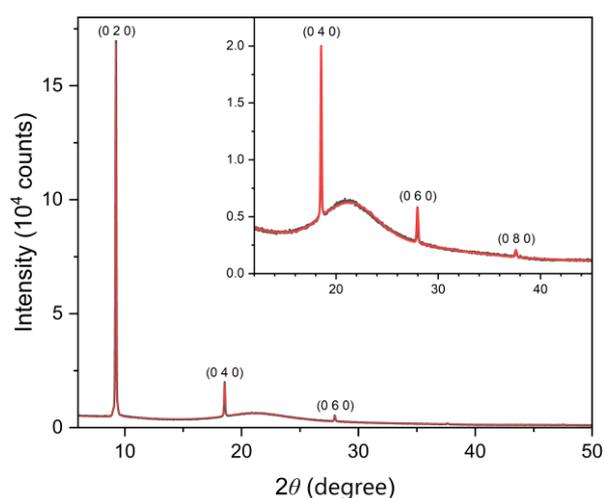


Figure S1. X-ray diffraction pattern of a neat Cz thin film on quartz (black line) including a simulation based on a Rietveld refinement procedure considering texture effects and an amorphous background signal (red line). The numbers indicate the *hkl* indices of the respective peaks. The inset shows an enlarged view of the region at large values of 2θ .

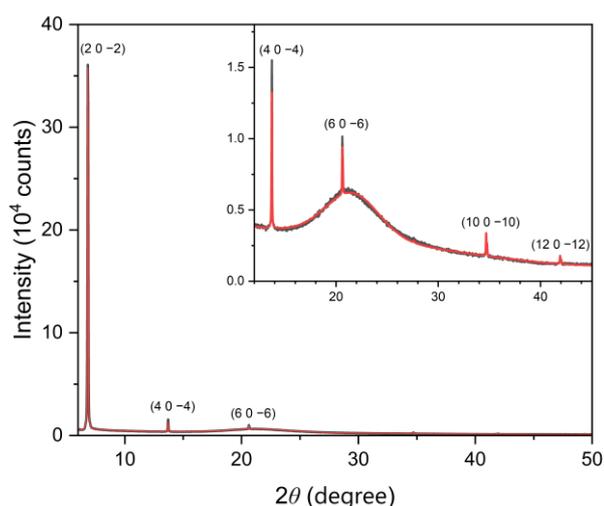


Figure S2. X-ray diffraction pattern of a neat *t*-Bu-Cz thin film on quartz (black line) including a simulation based on a Rietveld refinement procedure considering texture effects and an amorphous background signal (red line). The numbers indicate the *hkl* indices of the respective peaks. The inset shows an enlarged view of the region at large values of 2θ .

2. Absorption Spectrum of a PMMA Thin Film

Figure S3 shows the absorption spectrum of a neat PMMA thin film on quartz. The layer was spin-coated under the same conditions as for the other thin films. Absorption of the PMMA film starts only for wavelengths below 250 nm. Therefore, the absorption of PMMA does not overlap with the absorption of the carbazole derivatives investigated in the current study. The oscillations above 250 nm arise from interference of the thin film in the transmission measurement (etalon effect). We also note that the neat PMMA films did not show any detectable photoluminescence.

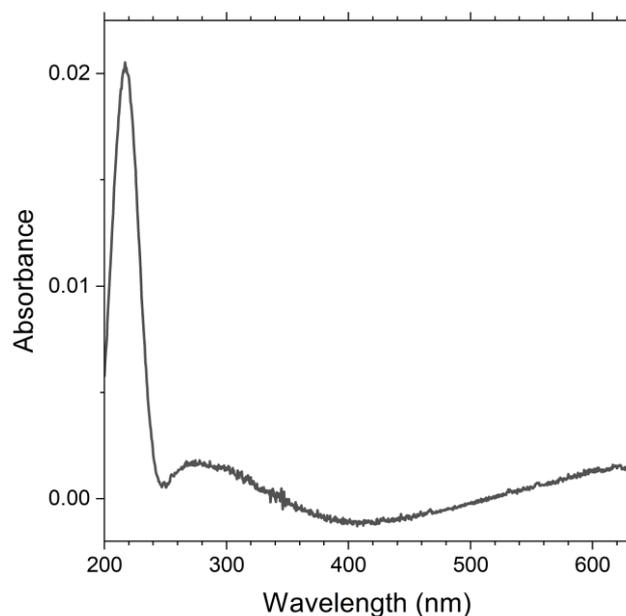


Figure S3. Absorption spectrum of a neat PMMA thin film produced by spin-coating on quartz.