

Direct Observation of Delayed Fluorescence from a Remarkable Back-Isomerization in Cy5

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Supporting Information

Phosphorescence and delayed fluorescence were measured with a high quality emission spectrophotometer (Jobin Yvon TRIAX 320) with high sensitive LN-CCD as detector (Jobin Yvon, CCD-3000V)). Figure S1 shows the setup for measuring the delayed fluorescence and phosphorescence.

In order to rule out the fast delayed fluorescence contributed from photoinduced reverse intersystem crossing from upper triplet levels (*e.g.*, $T_1 \rightarrow T_N \rightarrow S_1 \rightarrow S_0$) following $T_1 \rightarrow T_N$ excitation,¹⁻⁵ the rotated sector wheel was employed to block the laser beam and detection beam in turn for detecting the thermal activation delayed fluorescence. The sector wheel was revolved at a speed to allow observation of all delayed fluorescence and phosphorescence with a lifetime about 0.5 ms. The delayed fluorescence contributed from photoinduced reverse intersystem crossing from upper triplet levels (*e.g.*, $T_1 \rightarrow T_N \rightarrow S_1 \rightarrow S_0$) can be ruled out¹⁻⁵, because the lifetime about 10 ns of the delayed fluorescence contributed from the upper triplet levels is much shorter than the time resolution (around 0.5 ms) of the

rotated section wheel used. Furthermore, no any prompt fluorescence and stray light from laser scattering were detected during delayed fluorescence and phosphorescence measurements.

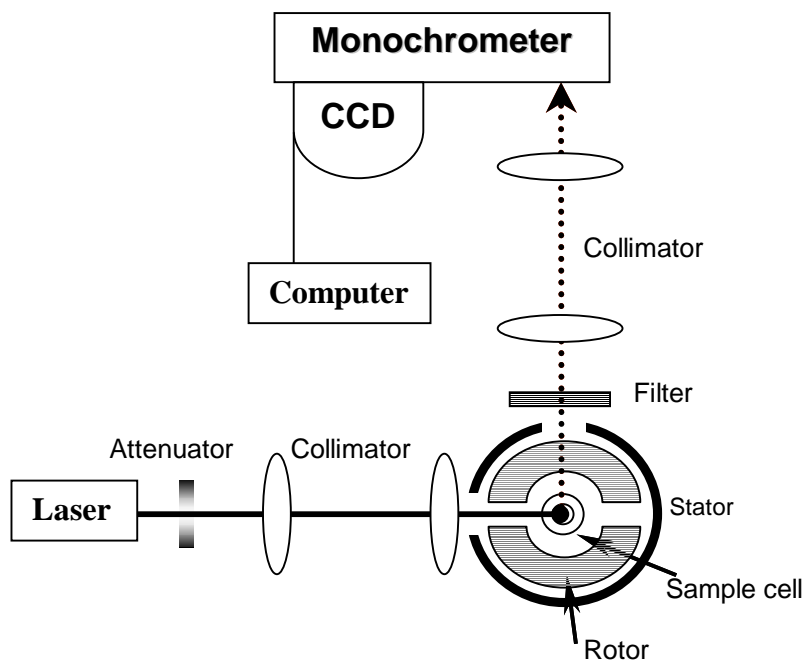


Figure S1 Setup of sector wheel for measuring the delayed fluorescence and phosphorescence.

References

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