

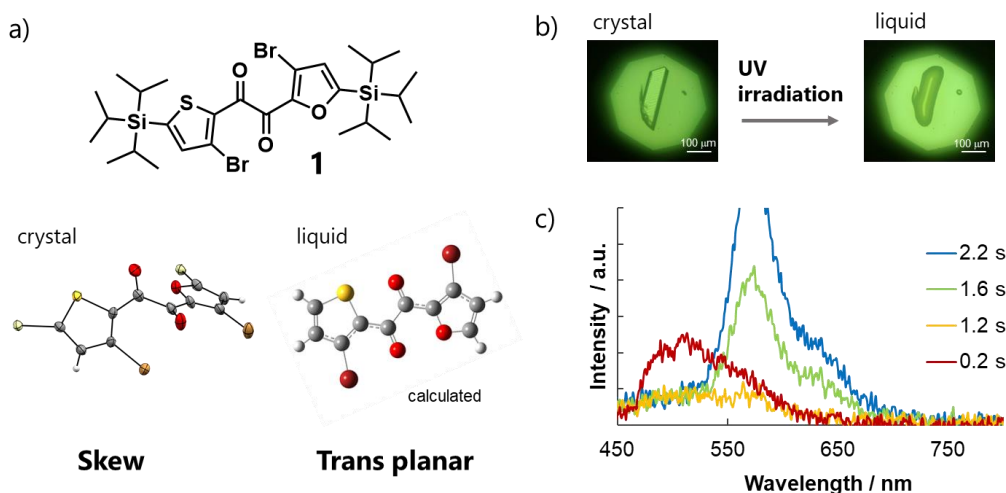
## Photo-induced crystal-liquid phase transition of heteroaromatic diketones probed by phosphorescence

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Previously, we demonstrated that heteroaromatic diketone **1** exhibits room-temperature phosphorescence in solvent-free liquid state but is virtually non-emissive in crystalline state due to a difference in the molecular conformation (Figures 1a).<sup>1</sup> Here we report our unexpected finding that irradiating UV light to the non-emissive crystal **1** induces melting, the progress of which is probed by the stepwise change in RTP properties (Figure 1b, c).

We irradiated UV light to a single crystal while monitoring the time-course of PL spectra. Prior to the visibly discernible melting, the drastic change of the PL spectra was observed within the initial two seconds. Then, the same RTP as in the solvent-free liquid state gradually increased in intensity (Figure 1c, green and blue line). The trans planar conformer generated by UV irradiation contributes to the melting transition. Our work represents the first example of a photo-induced RTP of organic compounds accompanied by solid-liquid phase transition, which promotes understanding of the phase transition phenomenon at the molecular level.



**Figure 1.** a) Chemical structure and conformations of **1**. b) Optical microscope images of crystal **1** before and after UV irradiation. c) Time course of the PL spectra of **1**.

1) M. Komura, T. Ogawa and Y. Tani, *Chem. Sci.*, **2021**, *12*, 14363–14368.