

Supplementary Information

Temperature-sensitive paints with rigorously controllable thickness applied for various shape metal substrate with highly stable connection based on demulsification-induced fast solidification strategy

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Videos

Video S1. Variation of luminescent emission intensity of WPU/PCD/Eu(DBM)₃Bipy-C (2 h) TSP with increasing temperature from 25 to 85°C when excited with UV light at 254 nm.

Video S2. Airplane model made from Zn sheet prepared with WPU/PCD/Eu(DBM)₃Bipy-C (2 h) TSP via DIFS method.

Video S3. Airplane model made from Zn sheet prepared with WPU/PCD/Eu(DBM)₃Bipy-C (2 h) TSP via DIFS method when excited with UV light at 254 nm.

Figures

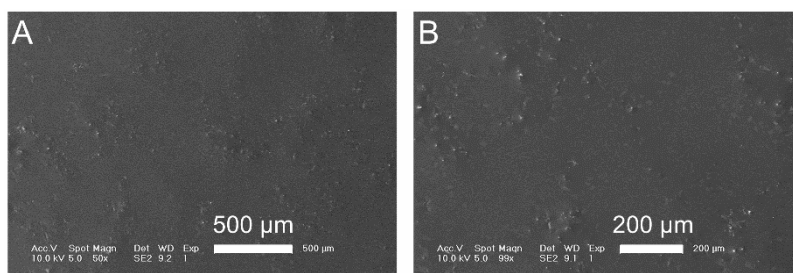


Fig. S1 (A, B) Surface SEM images of WPU/PCD/Eu(DBM)₃Bipy-C (2 h) TSP.

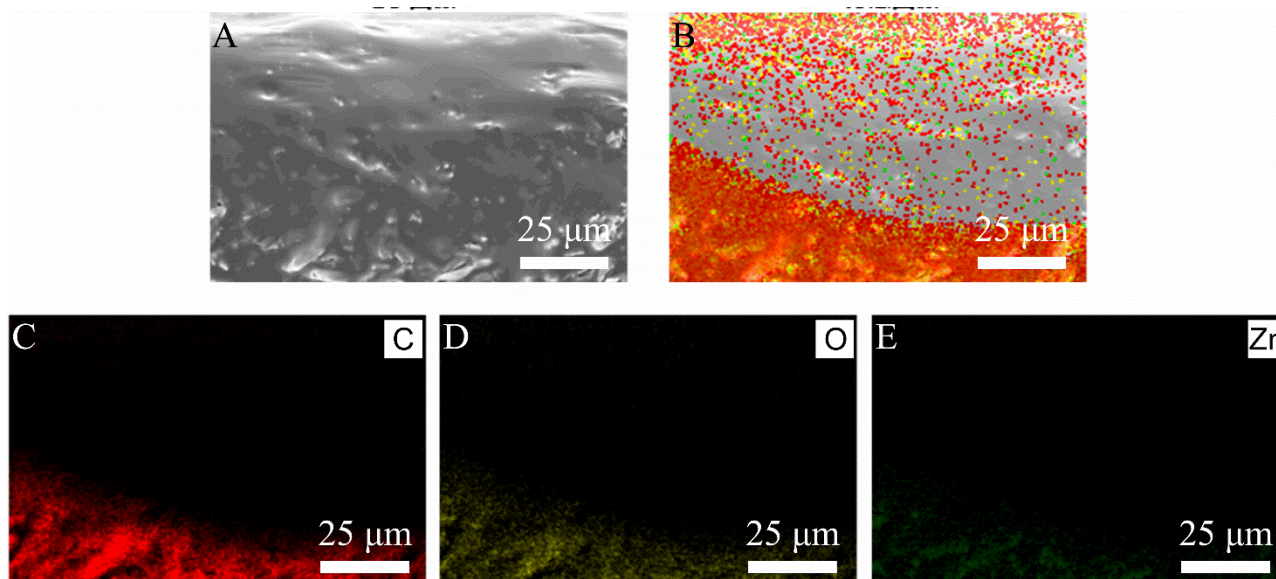


Fig. S2 SEM and EDS elemental mapping images of the cross-section of WPU/PCD/Eu(DBM)₃Bipy-C (2 h) TSP with Zn used as substrate shown in Fig. S2A: C)–E) C, O, and Zn elemental maps.

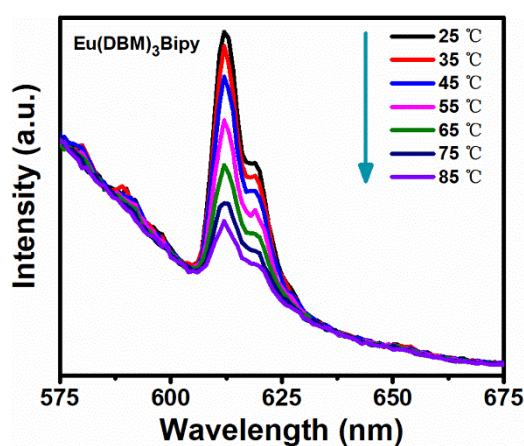


Fig. S3 Emission spectra of the Eu(DBM)₃Bipy luminescent molecular probe recorded in the temperature range of 25–85 °C at 283 nm excitation.

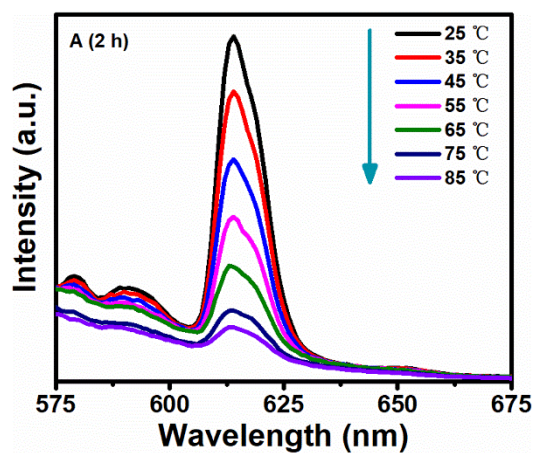


Fig. S4 Emission spectra of the WPU/PCD/Eu(DBM)₃Bipy-A (2 h) TSP recorded in the temperature range of 25-85°C at 283 nm excitation.

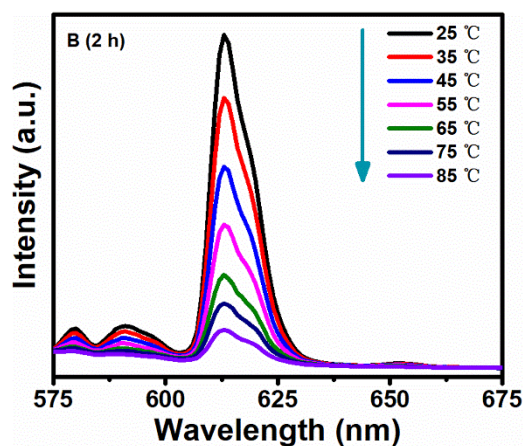


Fig. S5 Emission spectra of the WPU/PCD/Eu(DBM)₃Bipy-B (2 h) TSP recorded in the temperature range of 25-85°C at 283 nm excitation.

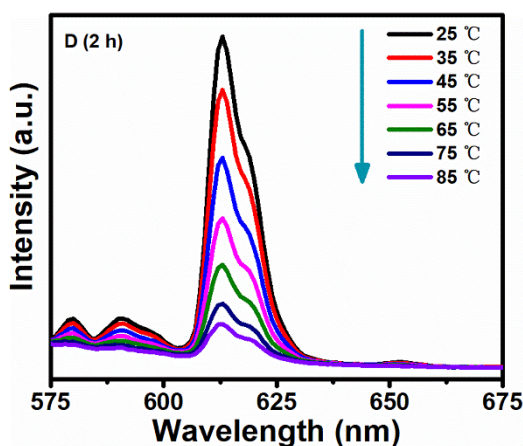


Fig. S6 Emission spectra of the WPU/PCD/Eu(DBM)₃Bipy-D (2 h) TSP recorded in the temperature range of 25-85°C at 283 nm excitation.

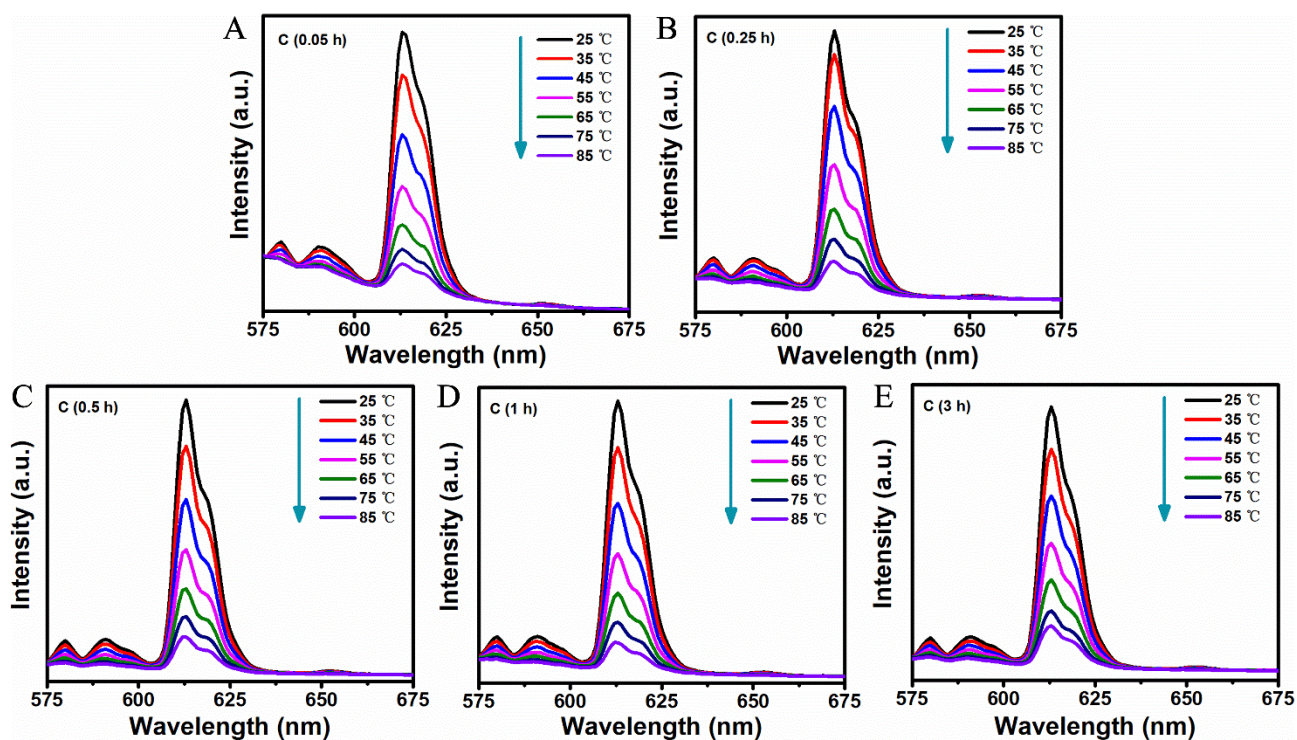


Fig. S7 (A, B, C, D, E) Emission spectra of the WPU/PCD/Eu(DBM)₃Bipy-C TSP with various conduction time (0.05 h, 0.25 h, 0.5 h, 1 h, 3 h, respectively) recorded in the temperature range of 25-85°C at 283 nm excitation.

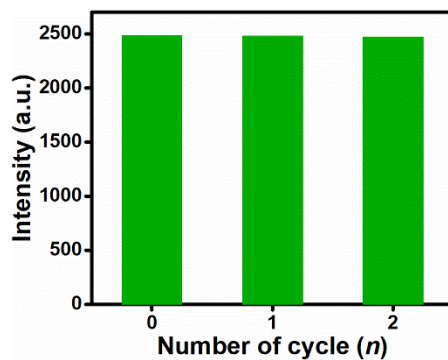


Fig. S8 Emission intensity at 613 nm after two times temperature cycles at 283 nm excitation.

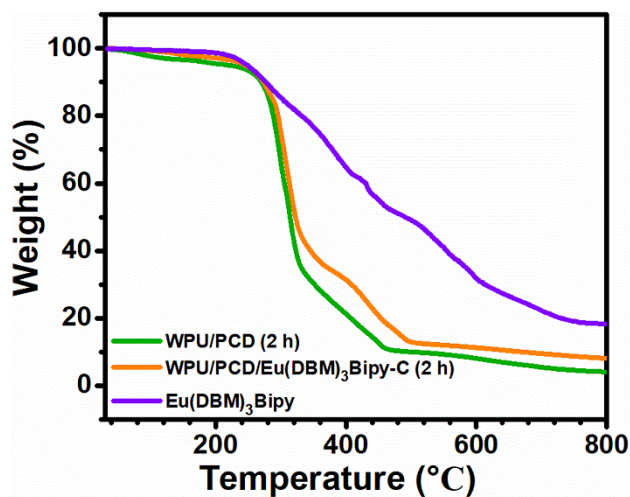


Fig. S9 TGA curves of $\text{Eu}(\text{DBM})_3\text{Bipy}$, WPU/PCD (2 h) film, and WPU/PCD/ $\text{Eu}(\text{DBM})_3\text{Bipy-C}$ (2 h) TSP.

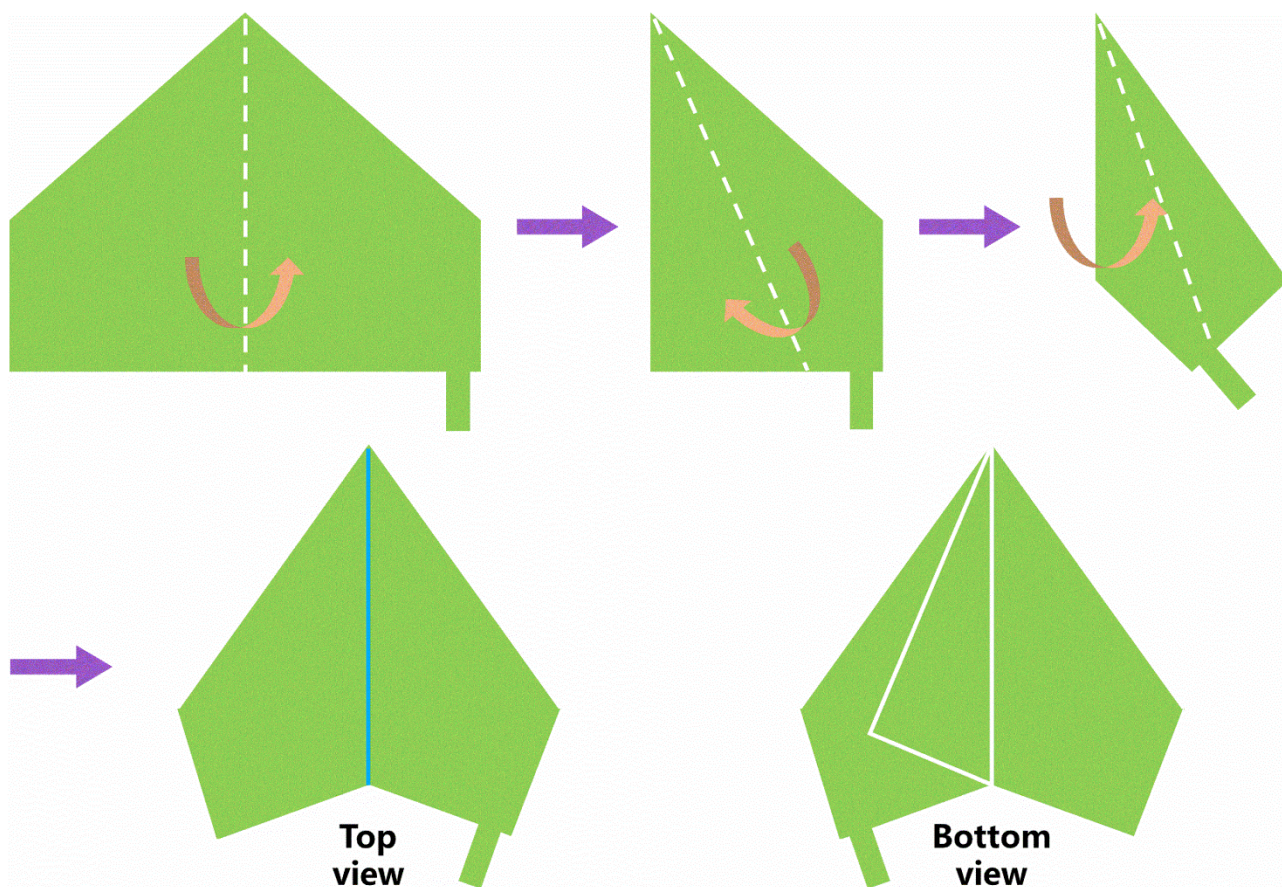


Fig. S10 Schematic illustration for the preparation process of airplane model with Zn sheet. The appendage at the tail of the aircraft was used to connect the anode. And the cathode was parallel to the middle part (blue line) top surface.