

Description of Additional Supplementary Files

File Name: Supplementary Movie 1

Description: The afterglow of P3, H3, and B3 excited by a 254 nm UV lamp.

File Name: Supplementary Movie 2

Description: The afterglow of P1, H1, and B1 excited by a 254 nm UV lamp.

File Name: Supplementary Movie 3

Description: The afterglow of P2, H2, and B2 excited by a 254 nm UV lamp.

File Name: Supplementary Movie 4

Description: The afterglow of P4, H4, and B4 excited by a 254 nm UV lamp.

File Name: Supplementary Movie 5

Description: The afterglow of 1VN with P, H, and B excited by a 254 nm UV lamp.

File Name: Supplementary Movie 6

Description: The afterglow of 9VA with P, H, and B excited by a 254 nm UV lamp.

File Name: Supplementary Movie 7

Description: The afterglow of MZ with P, H, and B excited by a 254 nm UV lamp.

File Name: Supplementary Movie 8

Description: The afterglow of NVP with P, H, and B excited by a 254 nm UV lamp.

File Name: Supplementary Movie 9

Description: The comparison of phosphorescence in microcrack detection and recovery after the excitation of 254 nm UV lamp.

File Name: Supplementary Movie 10

Description: The phosphorescence combined with Morse code after the excitation of 254 nm UV lamp.

File Name: Supplementary Data 1

Description: Atomic coordinates of optimized computational models for 1VN-B, 1VN-H, 1VN-P, 2VN-B, 2VN-H, 2VN-P, 9VA-B, 9VA-H, 9VA-P, MZ-B, MZ-H, MZ-P, NVP-B, NVP-H, and NVP-P.