Supplementary Information (SI) for Journal of Materials Chemistry C. This journal is © The Royal Society of Chemistry 2025

## **Supplementary Materials**

## **Spectral Measurements**

The spectral data of Group A, not included in the main text, are provided below:

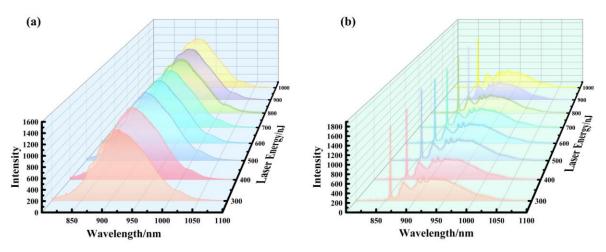


Fig. S1. The room-temperature(a) and low-temperature(b) spectra of all points processed by single pulses in Group A.

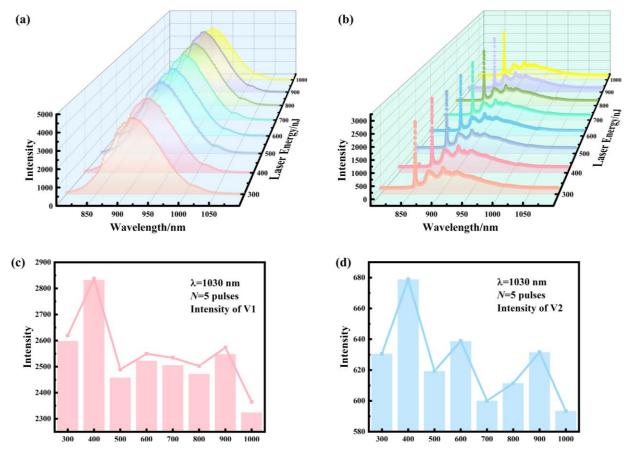


Fig. S2. The room-temperature(a) and low-temperature(b) spectra of the processing points after 5-pulse processing in Group A. The variations of V1(c) and V2(d) extracted from the spectra with pulse energy.

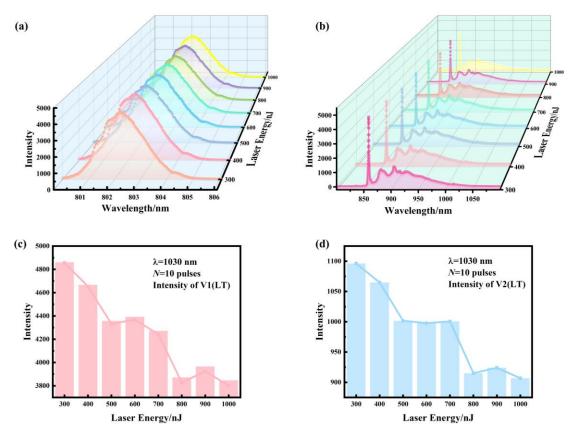


Fig. S3. The room-temperature(a) and low-temperature(b) spectra of the processing points after 10-pulse processing in Group A. The variations of V1(c) and V2(d) extracted from the spectra with pulse energy.

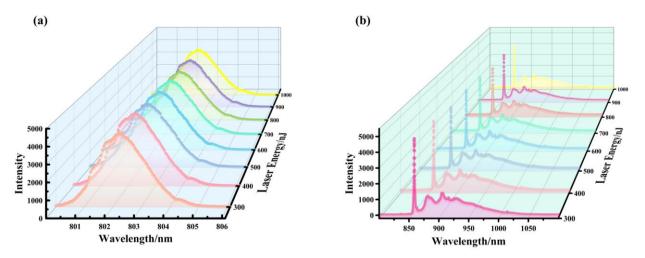


Fig. S4. The room-temperature(a) and low-temperature(b) spectra of all points processed by 15 pulses in Group A.

The remaining spectral results of Group B are also provided:

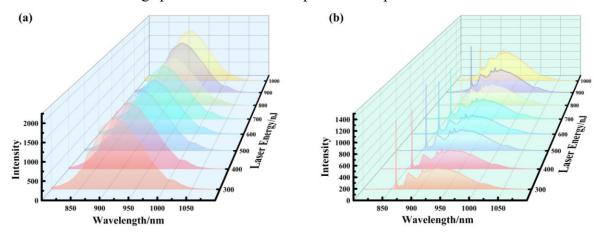


Fig. S5. The room-temperature(a) and low-temperature(b) spectra of all points processed by single pulses in Group A.

From the room-temperature and low-temperature spectral results shown in the figures above, it is clear that the method employed in this study achieves a remarkably high success rate in the preparation of color centers.