

Supporting Information

Tunable And Ultra-Stable UV Lights-Switchable Fluorescent Composites For Information Hiding And Storage

*Mengxiao Li,¹ Yu Feng,¹ Qingyong Tian,¹ Weijing Yao,¹ Li Liu,¹ Xuan Li,¹ Huanjun Wang¹ and Wei
Wu^{*1,2,3}*

¹Laboratory of Printable Functional Nanomaterials and Printed Electronics, School of Printing and
Packaging, Wuhan University, Wuhan 430072, P. R. China;

²National & Local Joint Engineering Research Center of Advanced Packaging Materials Developing
Technology, Hunan University of Technology, Zhuzhou 412007, P. R. China;

³Shenzhen Research Institute of Wuhan University, Shenzhen 518057, P. R. China

Email address:

Wei Wu: weiwu@whu.edu.cn (Corresponding author)

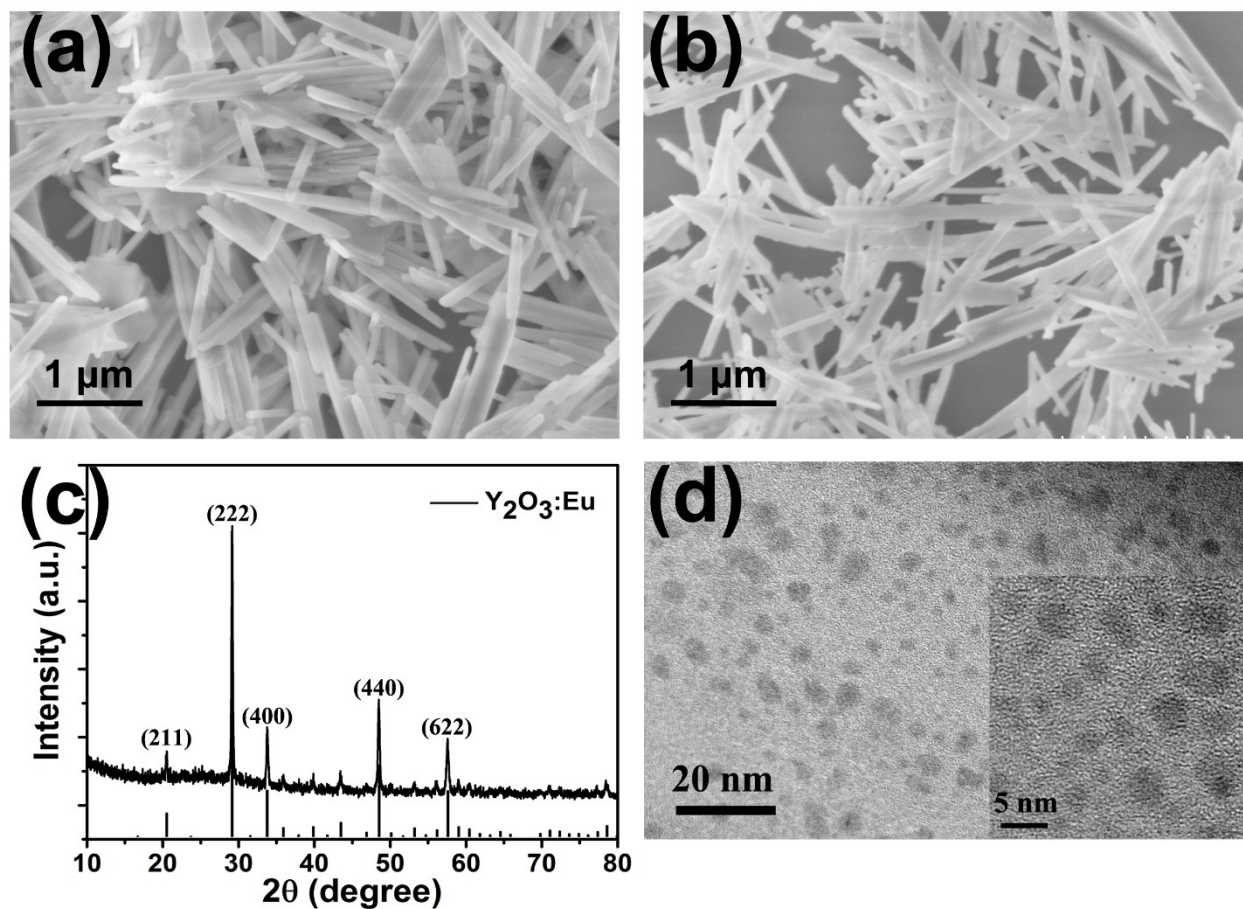


Figure S1 SEM images of sample before (a) and after (b) annealing, XRD image of Y₂O₃: Eu sample annealed at 1000 °C for 4h (c), and TEM image of CDs (inset: HRTEM image) (d).

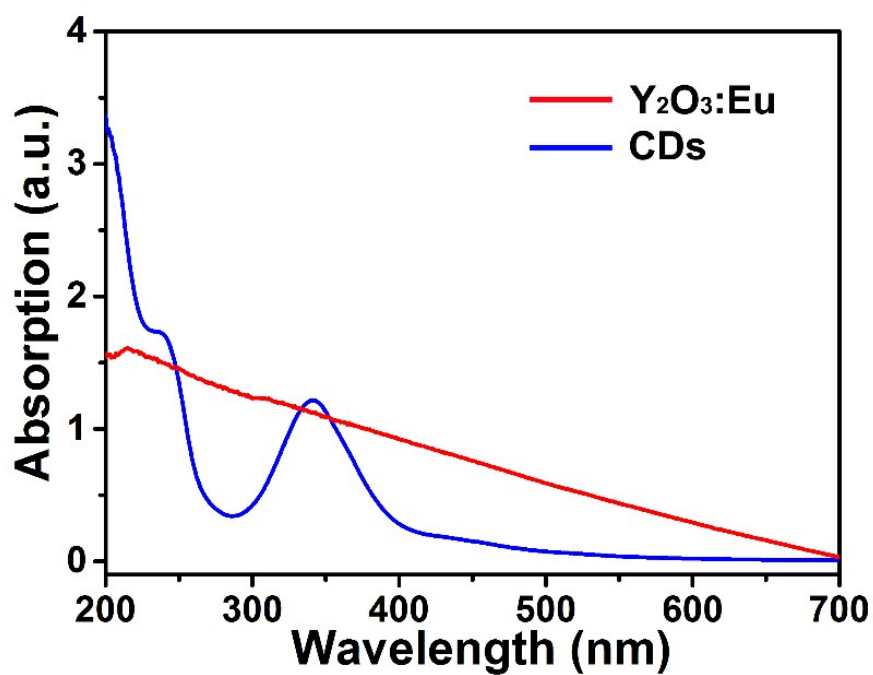


Figure S2 Absorption spectra of $\text{Y}_2\text{O}_3:\text{Eu}$ and CDs solution.

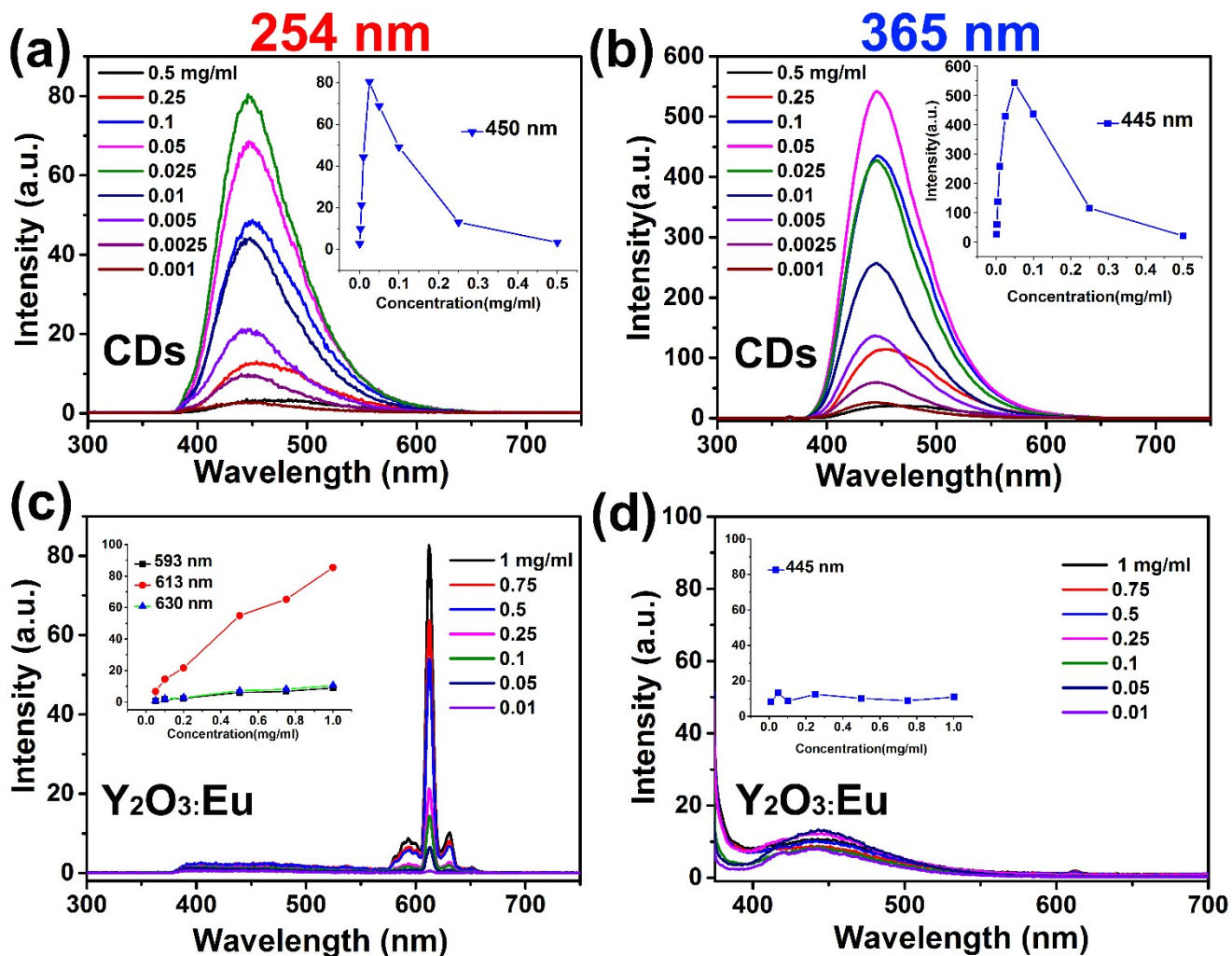


Figure S3 Fluorescent spectra of CDs and $\text{Y}_2\text{O}_3:\text{Eu}$ at low concentration under 254 nm and 365 nm excitation, respectively (inset: the line charts show peak intensity change with the increasing concentration).

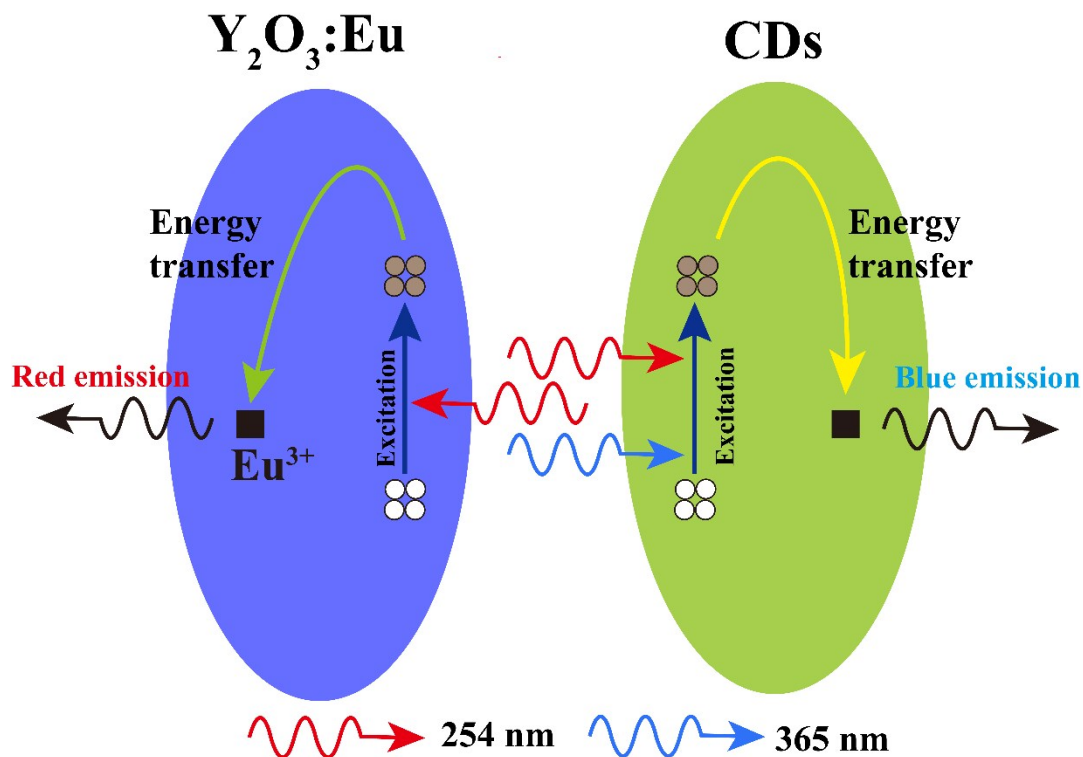
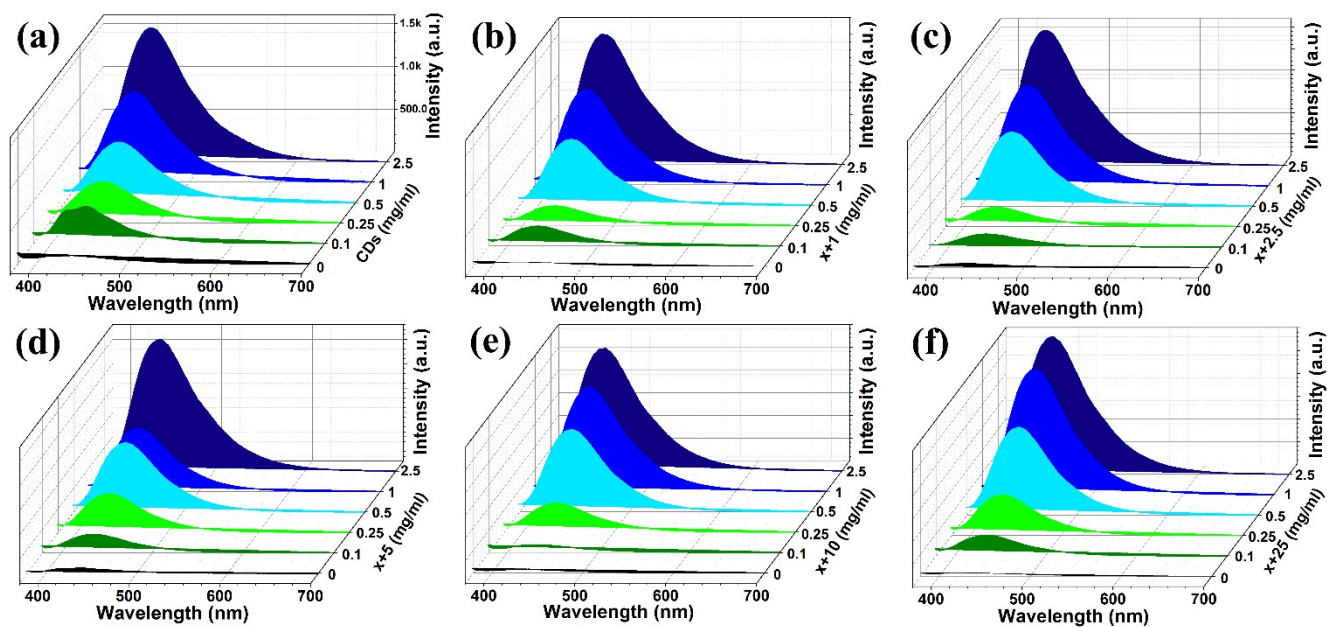


Figure S4 The brief mechanism diagrams of Y₂O₃: Eu and CDs.



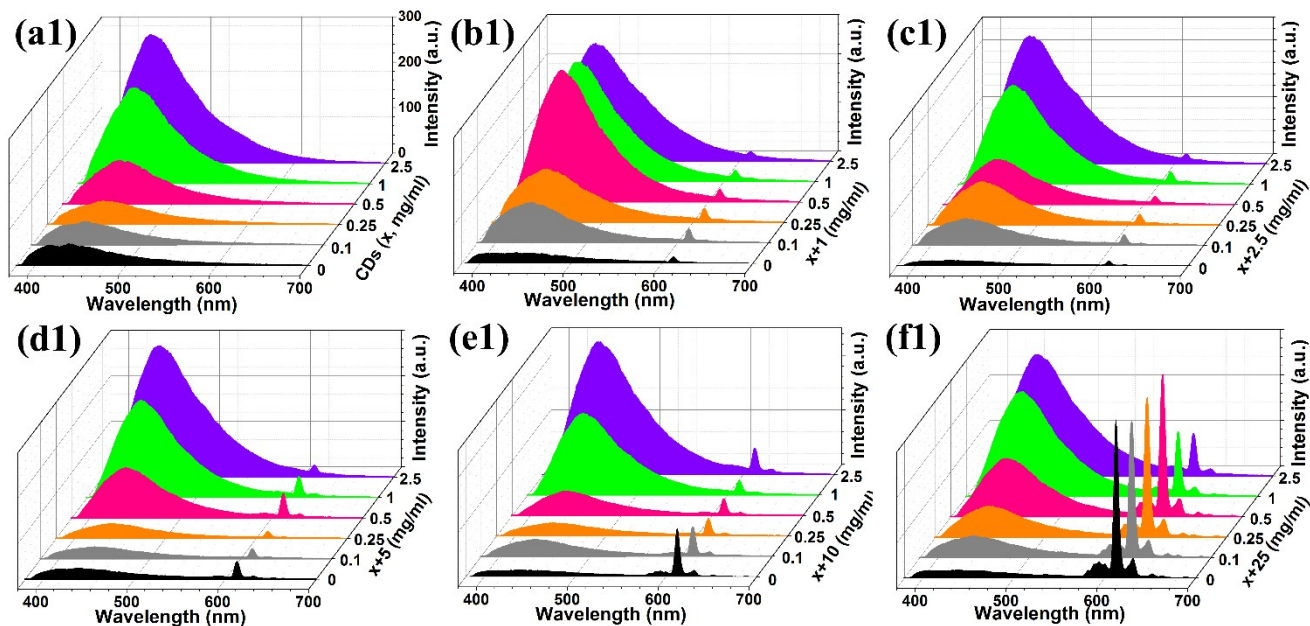


Figure S5 Measured fluorescent spectrum of the multicolor blocks printed on paper under 365 nm excitation (a-f) and 254 nm excitation (a1-f1). The graphs of **a**, **a1** is corresponding to the images of the first line in **Figure 2a**, **b**, respectively. **b**, **b1** to the second line, **c**, **c1** to the third line, **d**, **d1** to the fourth line, **e**, **e1** to the fifth line, and **f**, **f1** to the sixth line.

365 nm																	
CIE xyY			CIE xyY2			CIE xyY3			CIE xyY4			CIE xyY5			CIE xyY6		
0.3215	0.3226	1.71	0.1515	0.1559	4.11	0.1440	0.1525	6.29	0.1672	0.1849	15.52	0.2074	0.2249	23.44	0.2368	0.2645	34.26
0.3262	0.3264	1.82	0.1503	0.1542	4.42	0.1412	0.1474	6.80	0.2041	0.2178	21.87	0.2417	0.2680	35.60	0.2657	0.3236	56.43
0.3293	0.3311	1.72	0.1476	0.1530	4.76	0.2055	0.2182	21.95	0.1985	0.2107	20.35	0.2368	0.2593	32.79	0.2549	0.2999	47.48
0.3251	0.3254	1.69	0.1489	0.1551	4.60	0.1527	0.1636	11.90	0.2176	0.2317	25.14	0.2447	0.2717	36.95	0.2565	0.3038	48.91
0.3227	0.3224	1.72	0.1403	0.1431	7.33	0.1412	0.1466	6.87	0.2148	0.2275	24.12	0.2464	0.2753	38.09	0.2483	0.2801	39.74
0.3102	0.3120	1.80	0.1493	0.1541	4.80	0.1521	0.1618	11.70	0.2240	0.2394	27.10	0.2336	0.2540	31.00	0.2413	0.2662	34.75
254 nm																	
CIE xyY			CIE xyY2			CIE xyY3			CIE xyY4			CIE xyY5			CIE xyY6		
0.3844	0.3869	1.24	0.2709	0.2719	2.31	0.2101	0.2269	3.46	0.1555	0.1765	6.01	0.1582	0.1822	7.21	0.1870	0.2170	17.75
0.2418	0.2154	8.58	0.2328	0.2316	2.66	0.2549	0.2554	2.29	0.1452	0.1541	5.90	0.1416	0.1525	7.93	0.1837	0.2091	19.04
0.2601	0.2070	10.11	0.2357	0.2288	2.45	0.1465	0.1504	8.17	0.2078	0.2185	22.00	0.1420	0.1521	7.48	0.1677	0.1942	15.03
0.3519	0.2553	31.10	0.2389	0.2133	3.90	0.1804	0.1802	3.68	0.1725	0.1773	13.57	0.1905	0.2004	18.26	0.2314	0.2531	30.87
0.4243	0.2880	20.17	0.2978	0.2130	6.12	0.2671	0.2132	5.86	0.1835	0.1758	5.44	0.1553	0.1652	4.29	0.1511	0.1693	9.17
0.6127	0.3431	11.08	0.5346	0.3078	7.31	0.4426	0.2726	14.24	0.3964	0.2486	12.70	0.2125	0.1933	14.29	0.1790	0.1902	13.62

Figure S6 Measured CIE xyY data of color blocks in **Figure 3**, and the corresponding CIE coordinates of color blocks in each line.

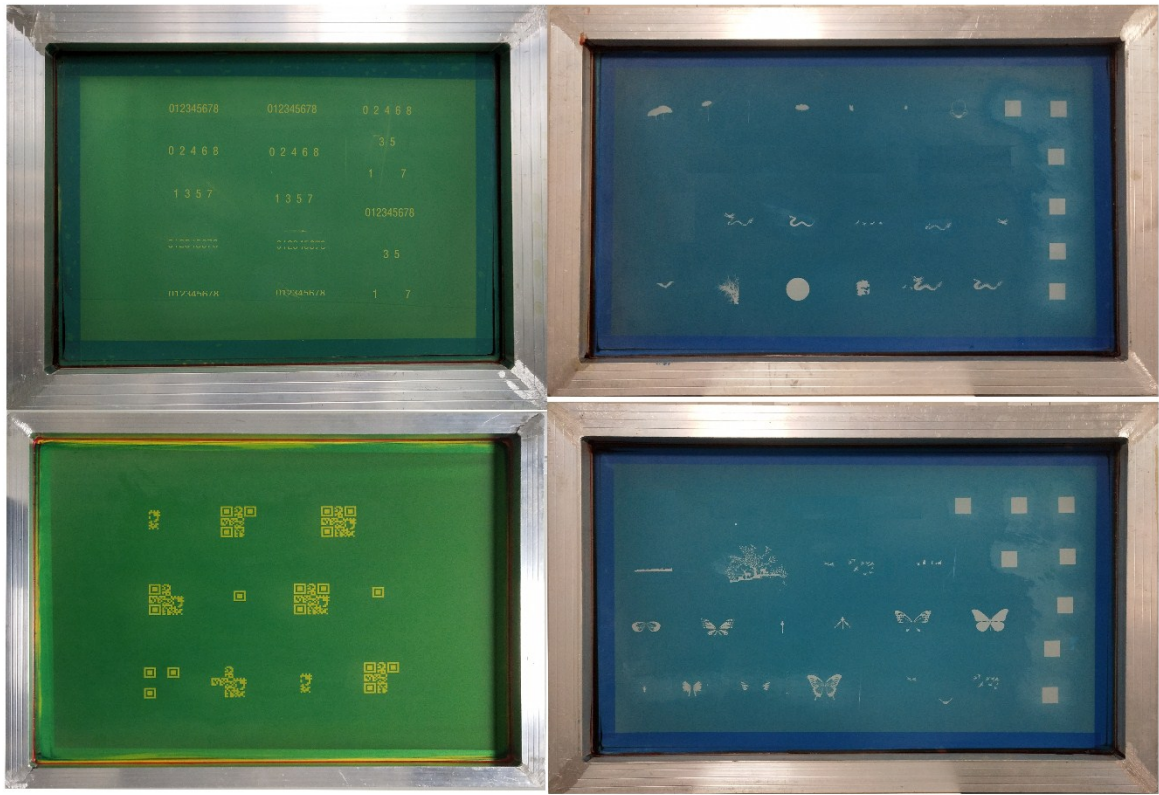


Figure S7 The photograph of screen printing plates.