Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.
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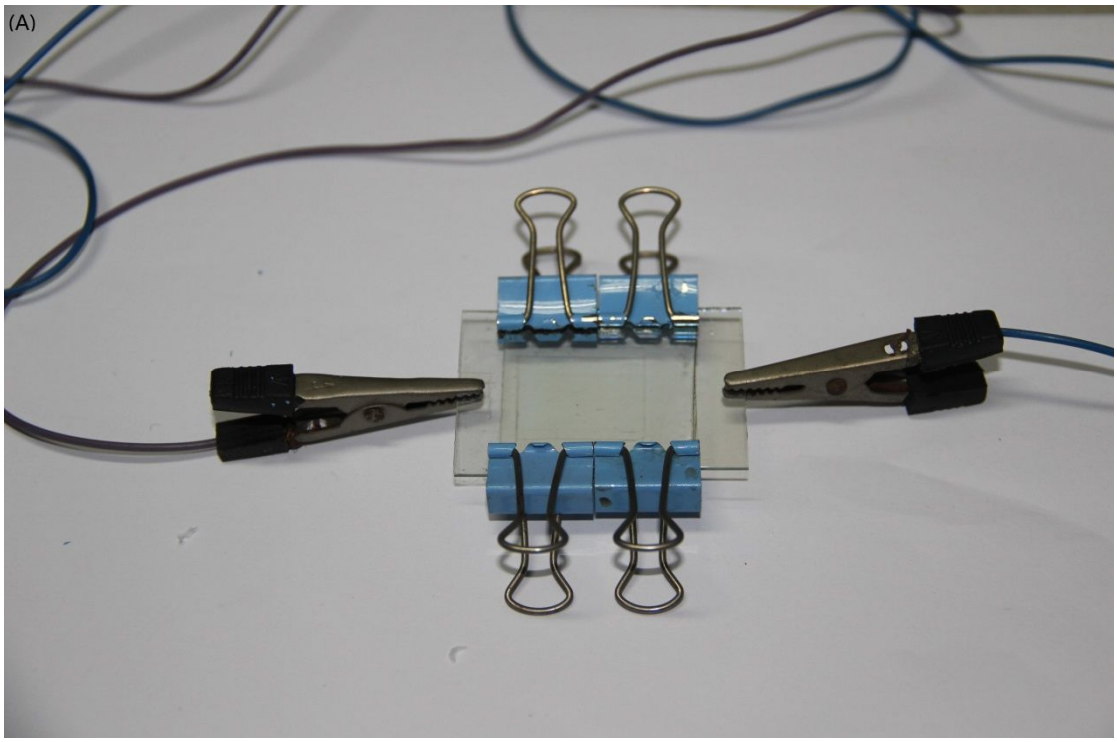
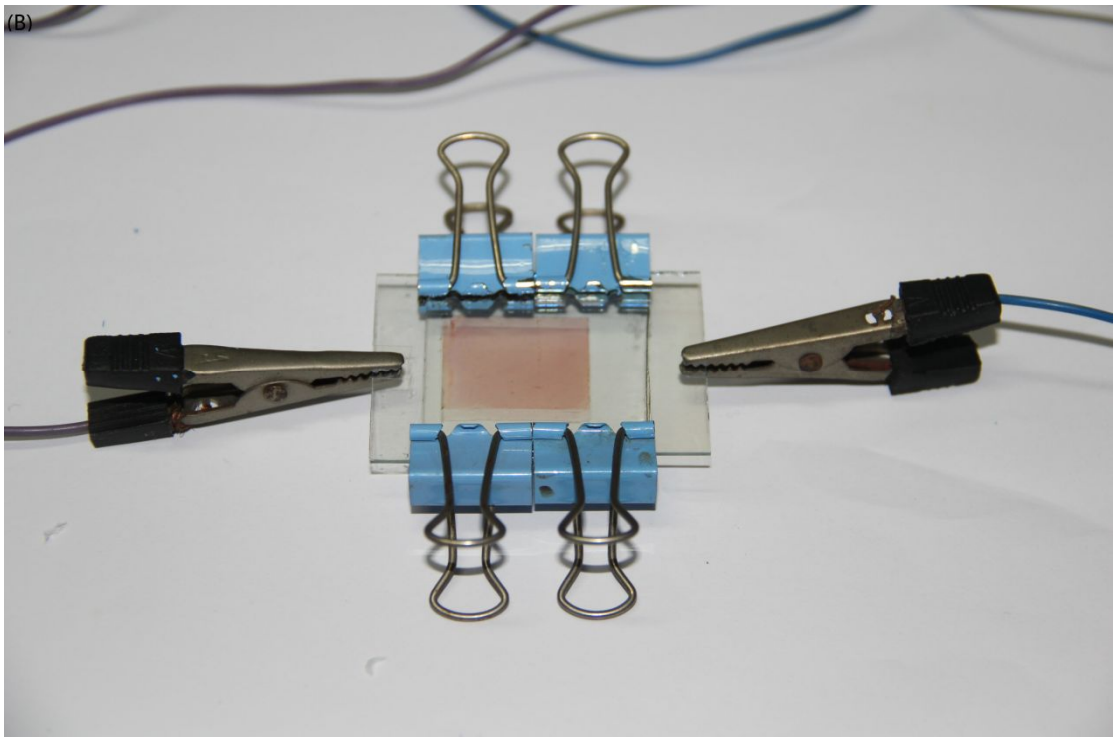
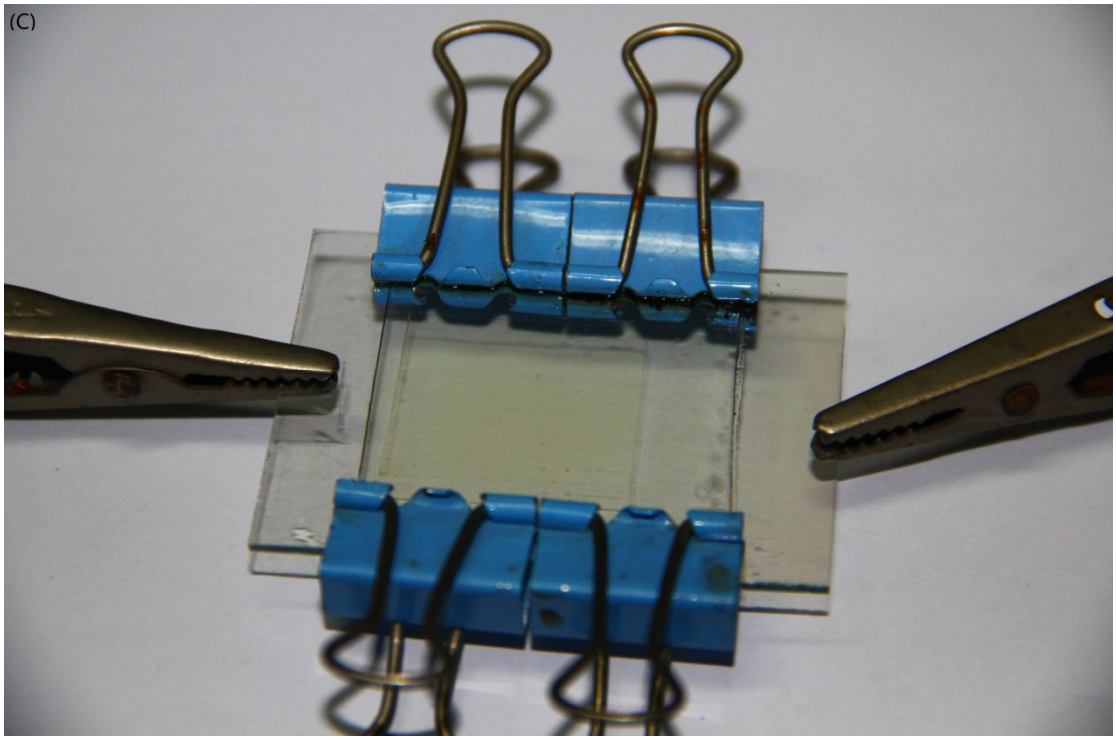
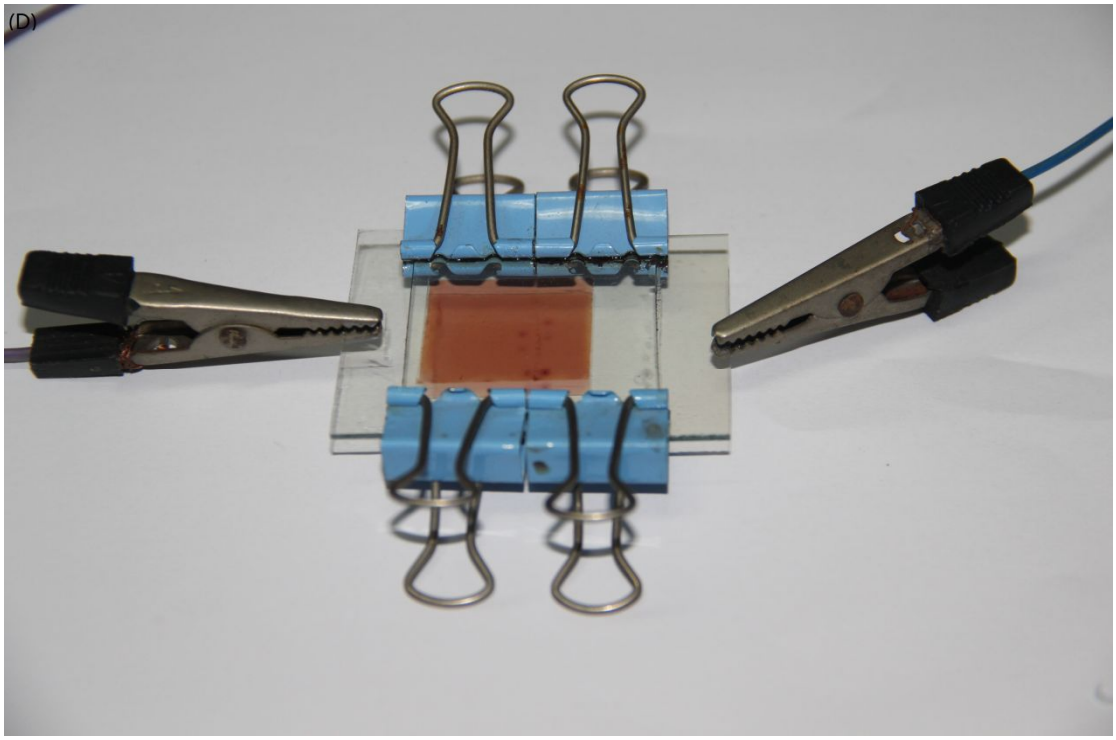
Electronic Supporting Information

1. Colors of sandwich-type ECDs based on ADDEDs

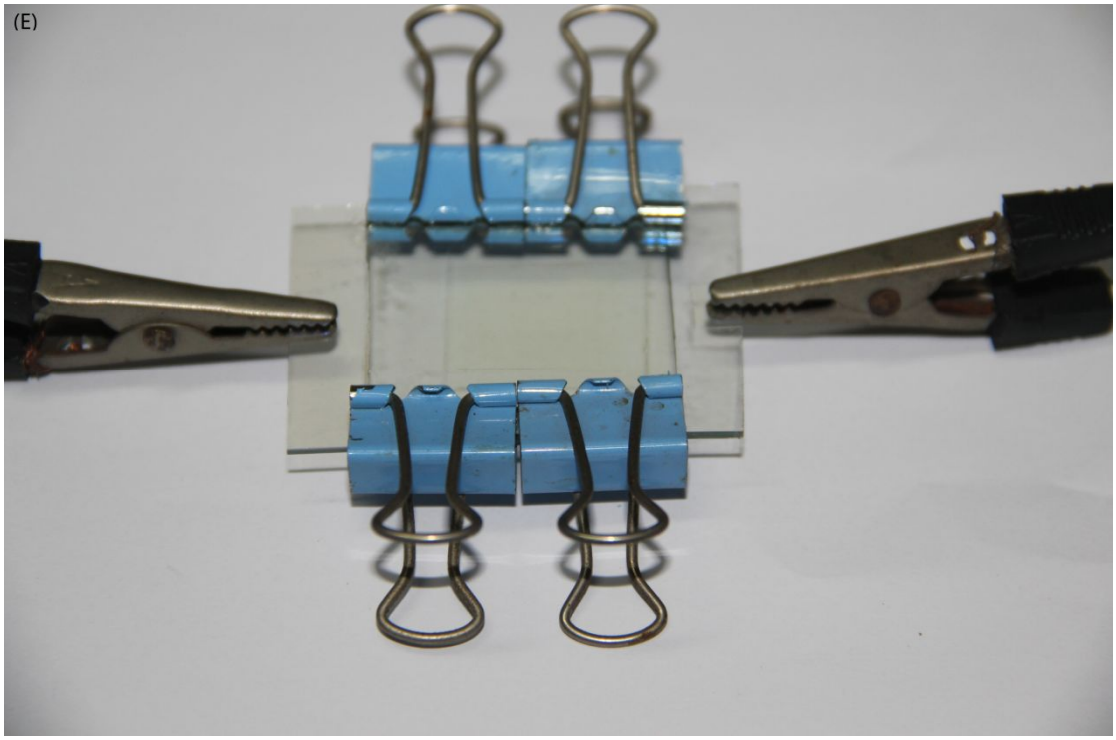




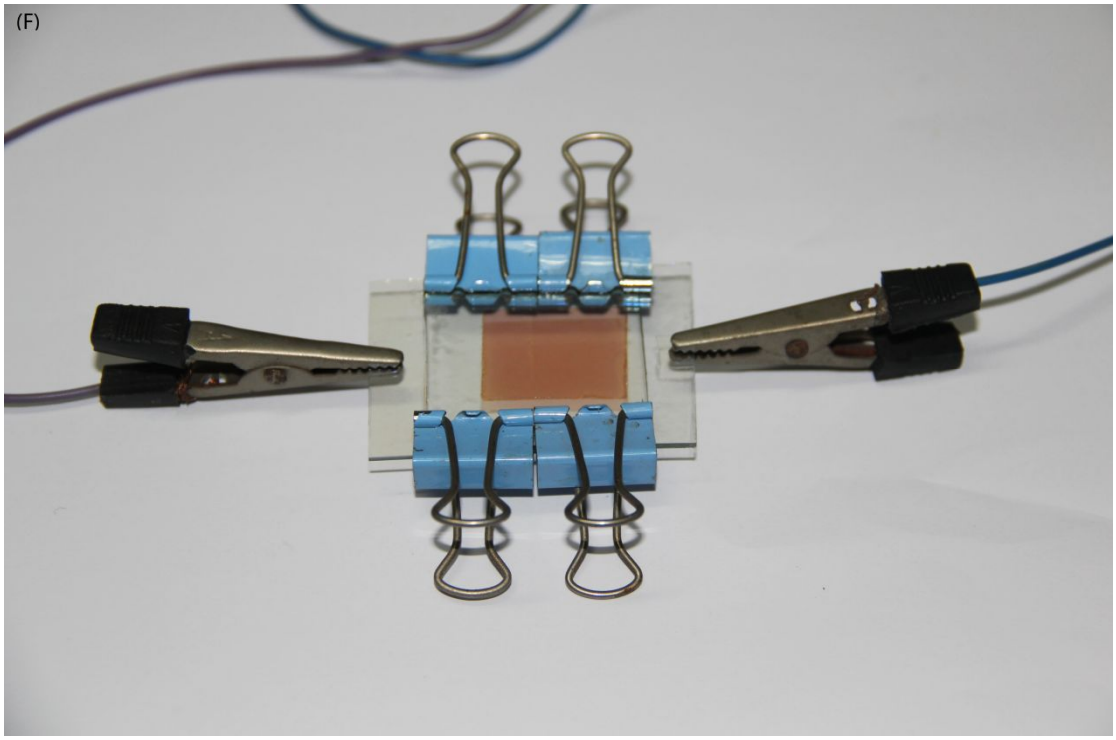

(C)


(D)

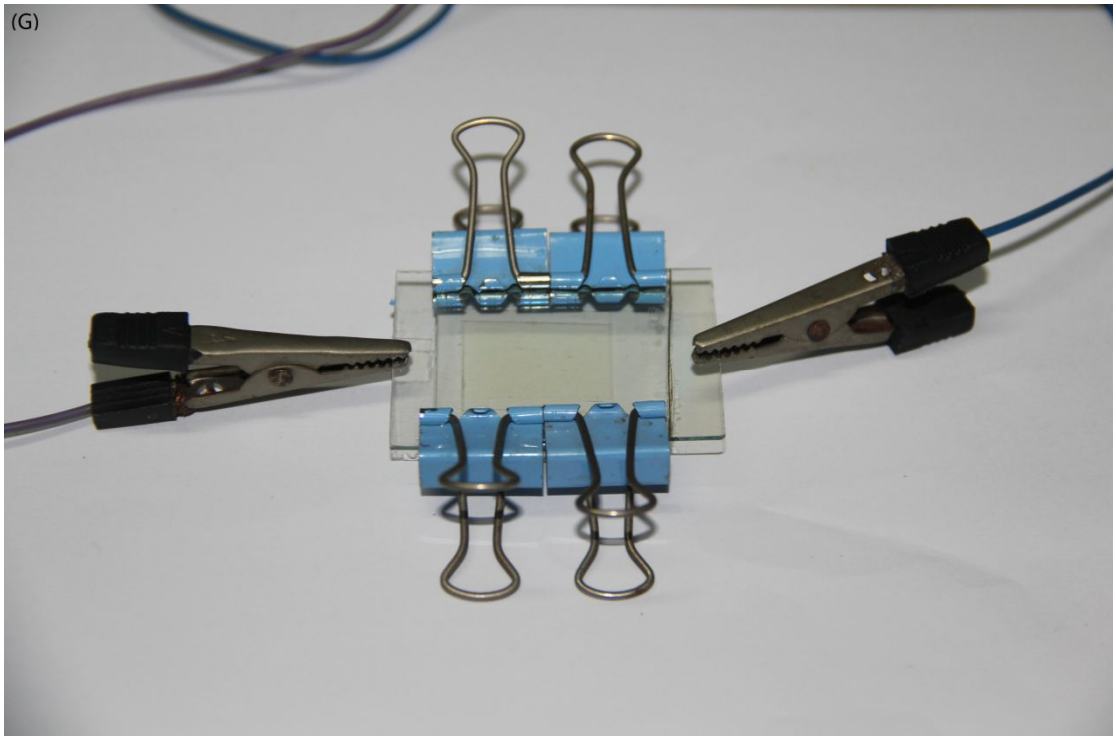
(E)



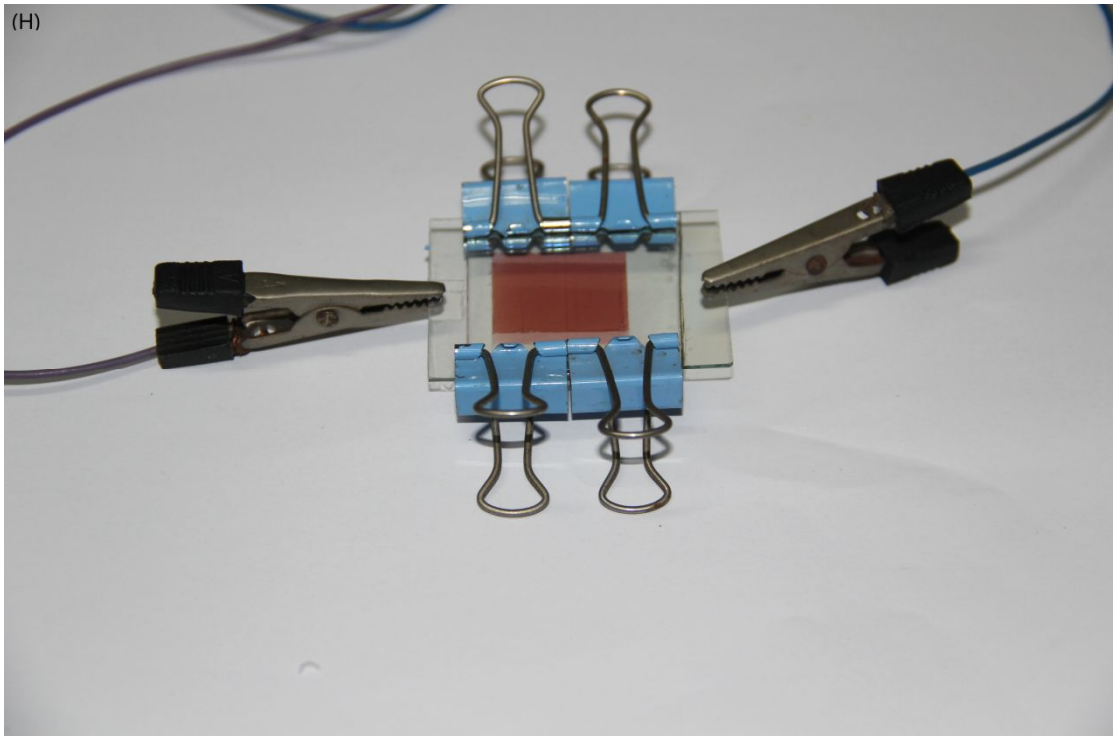
(F)



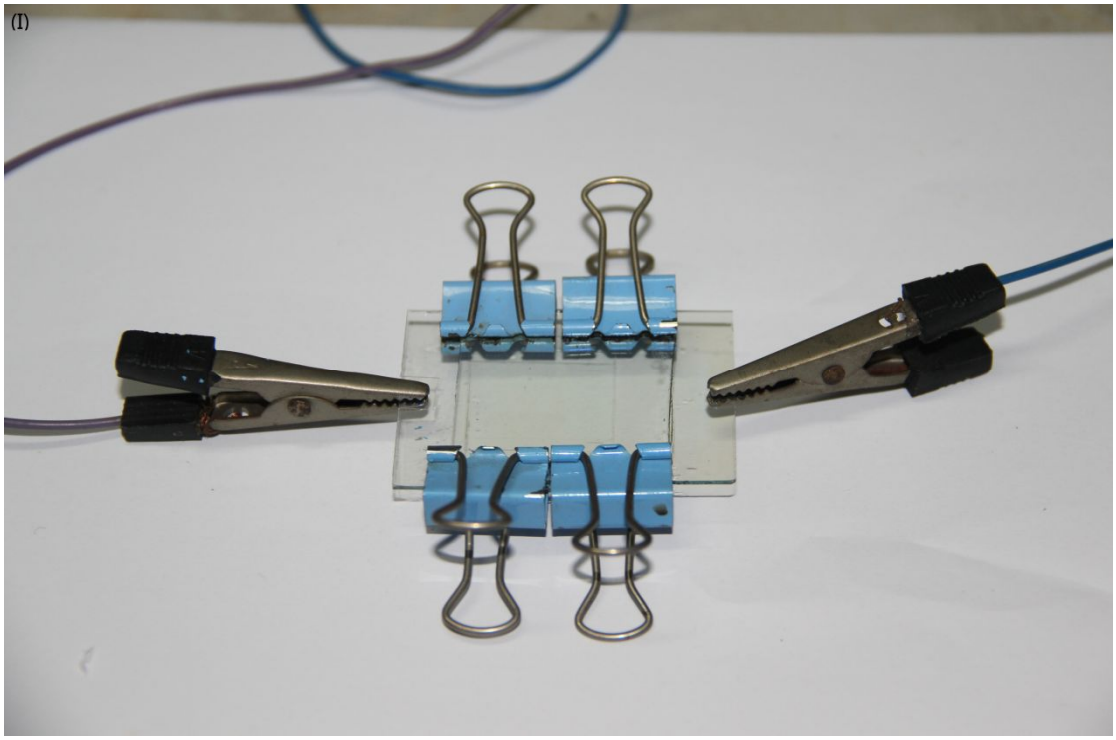
(G)



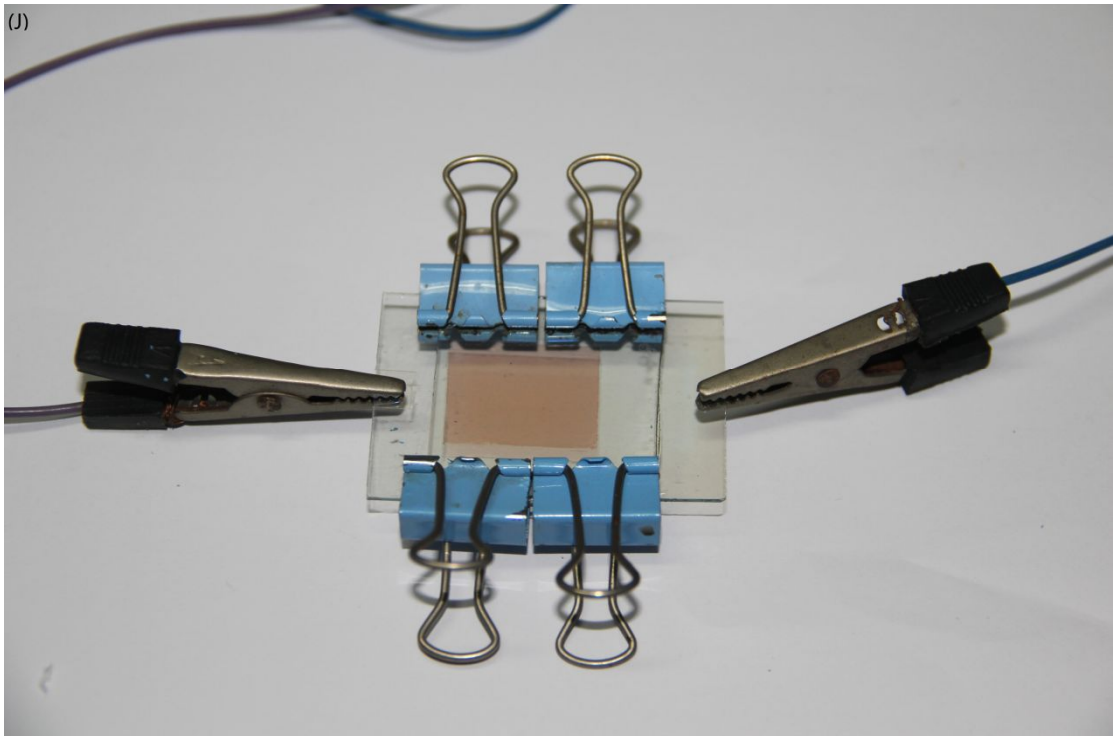
(H)

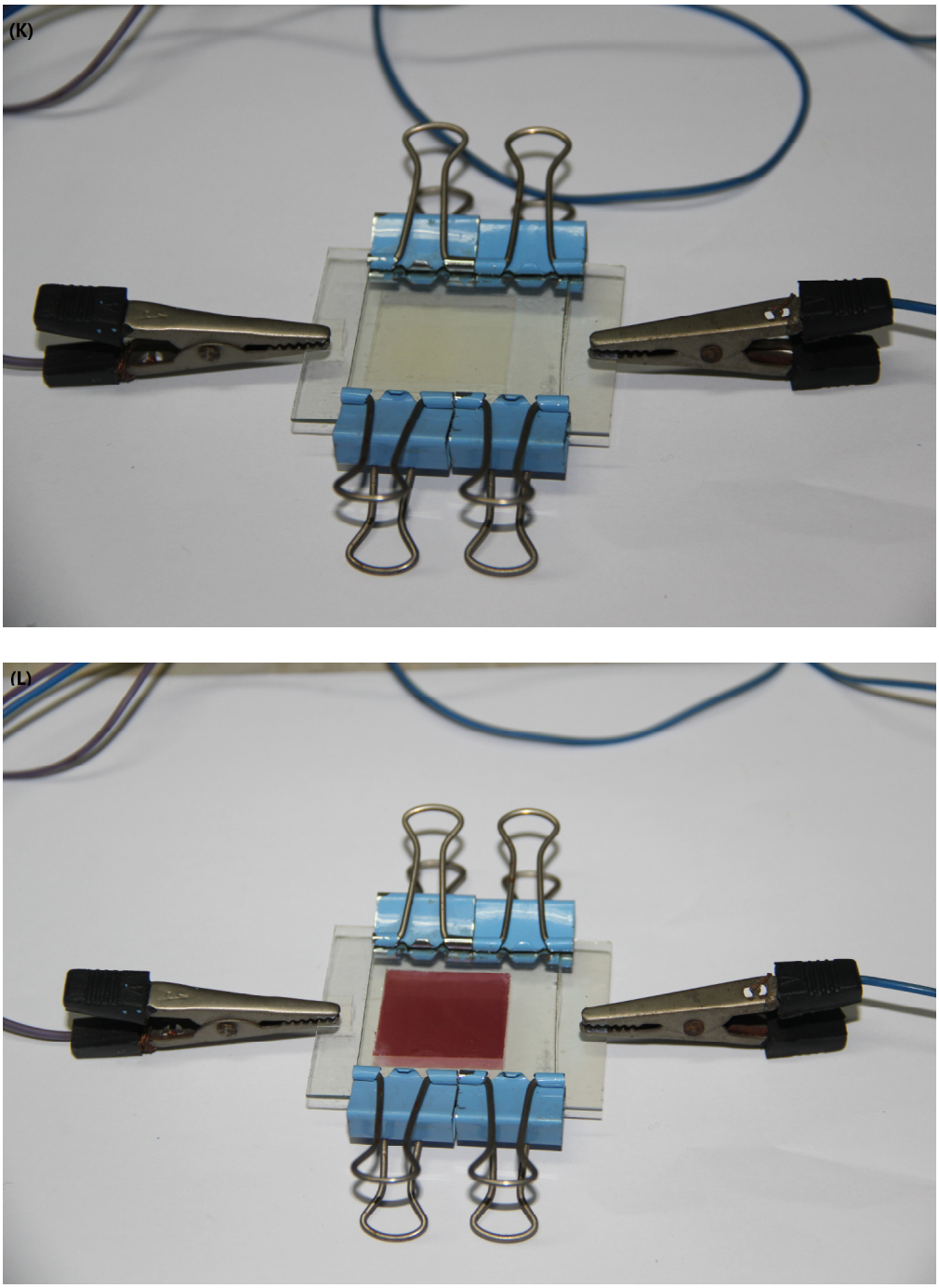


(I)



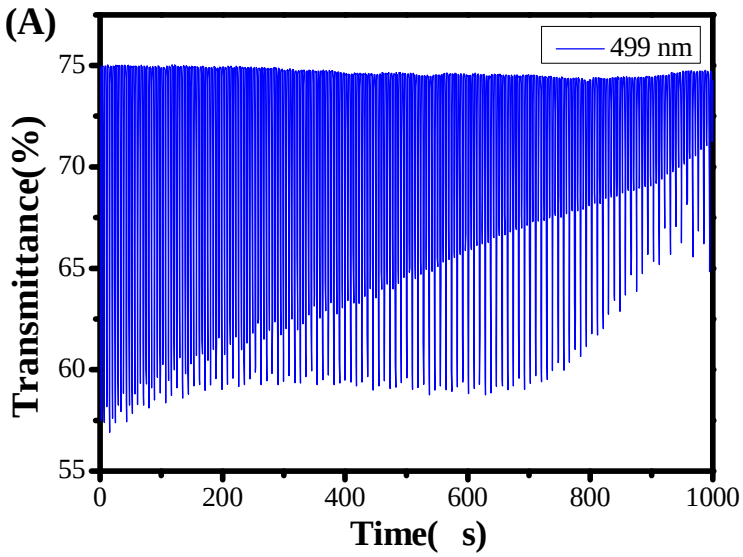
(J)

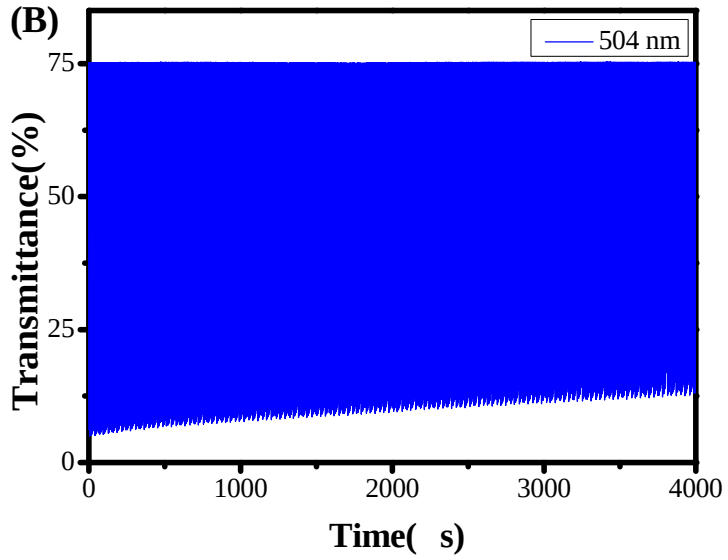


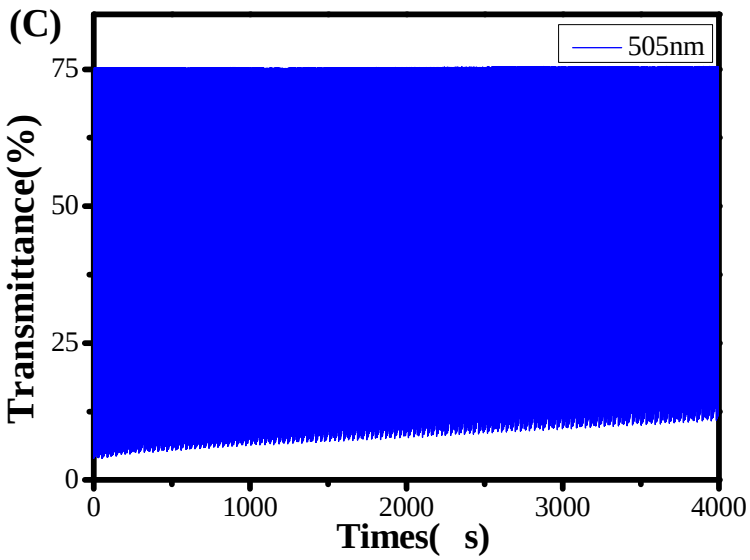


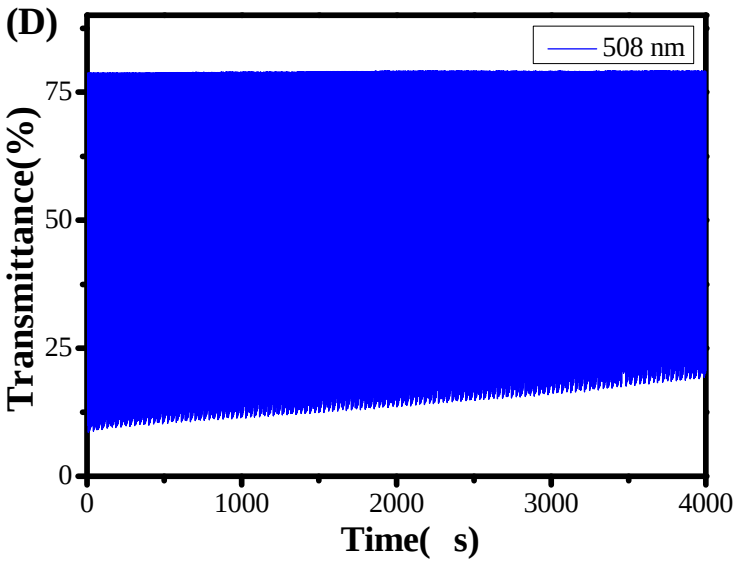
S.Fig. 1. Colors of sandwich-type ECDs based on ADDEDs: (A) bleached state and (B) colored state at 3.0 V for compound **a**; (C) bleached state and (D) colored state at 3.0 V for compound **b**; (E) bleached state and (F) colored state at 3.0 V for compound **c**; (G) bleached state and (H) colored state at 3.0 V for compound **d**; (I) bleached state and (J) colored state at 3.0 V for compound **e**; and (K) bleached state and (L) colored state at 3.0 V for compound **f**.

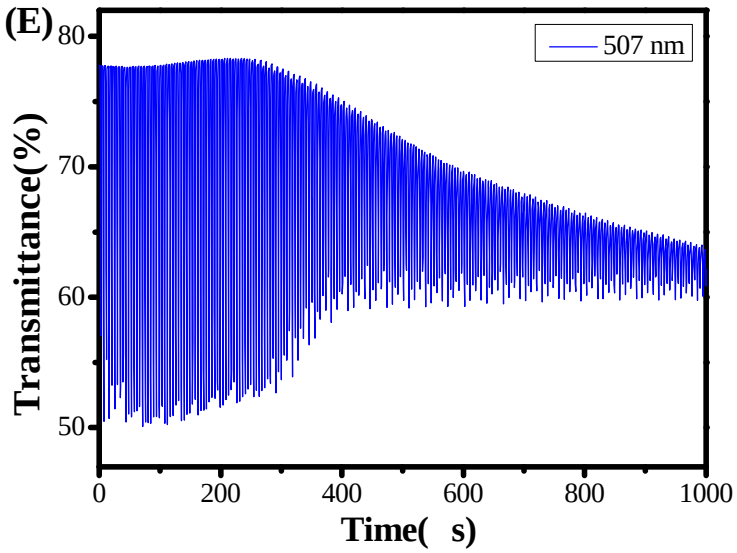
2. Optical transmittance for ECDs based on ADDEDs

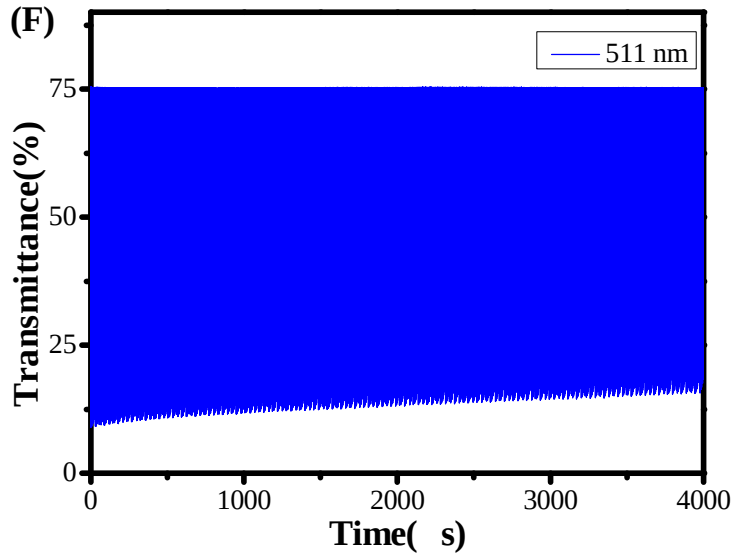





(C)
505nm
75
50
25
0
Transmittance(%)
0
1000
2000
3000
4000
Times(s)

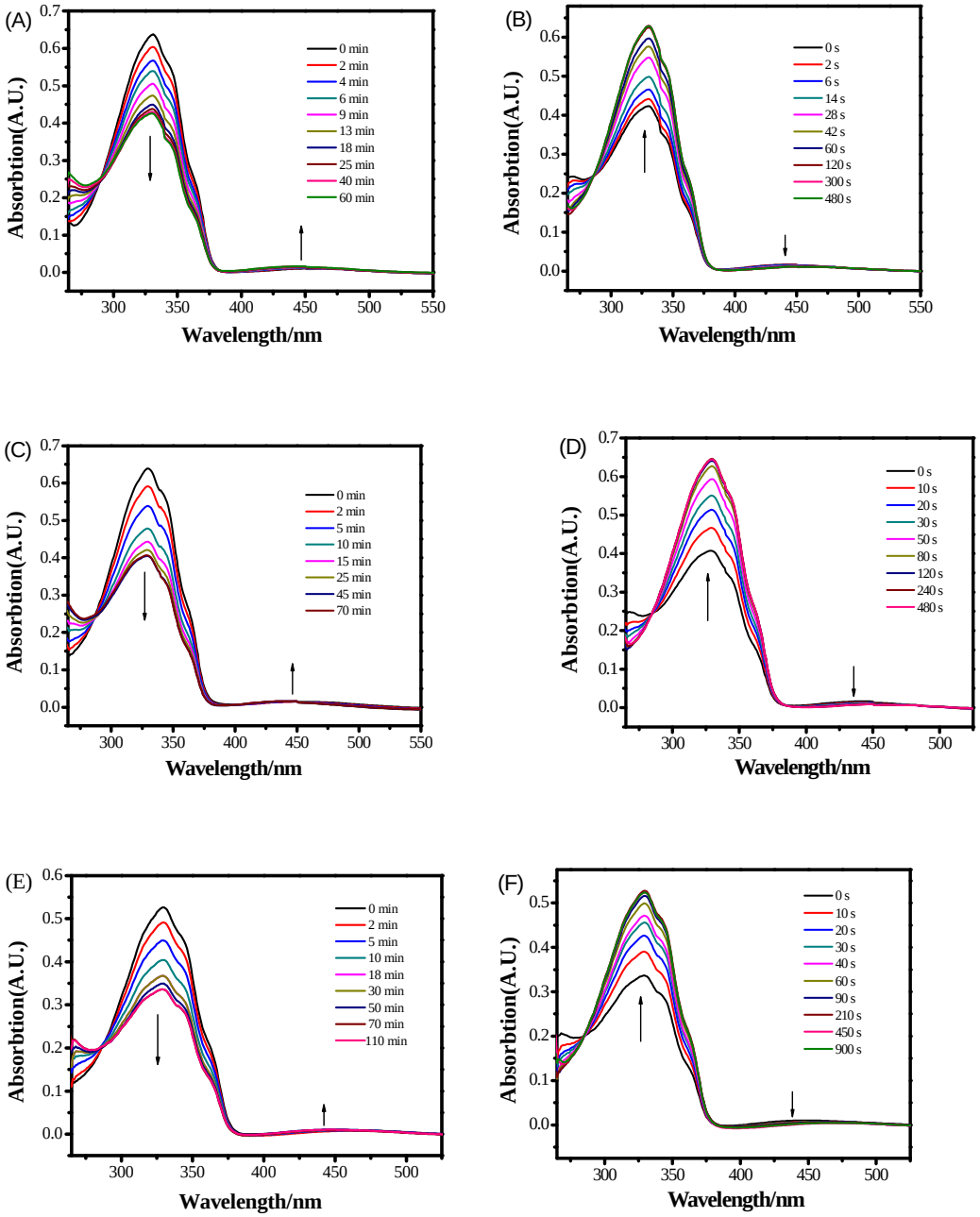

(D)
508 nm
75
50
25
0
Transmittance(%)
0
1000
2000
3000
4000
Time(s)

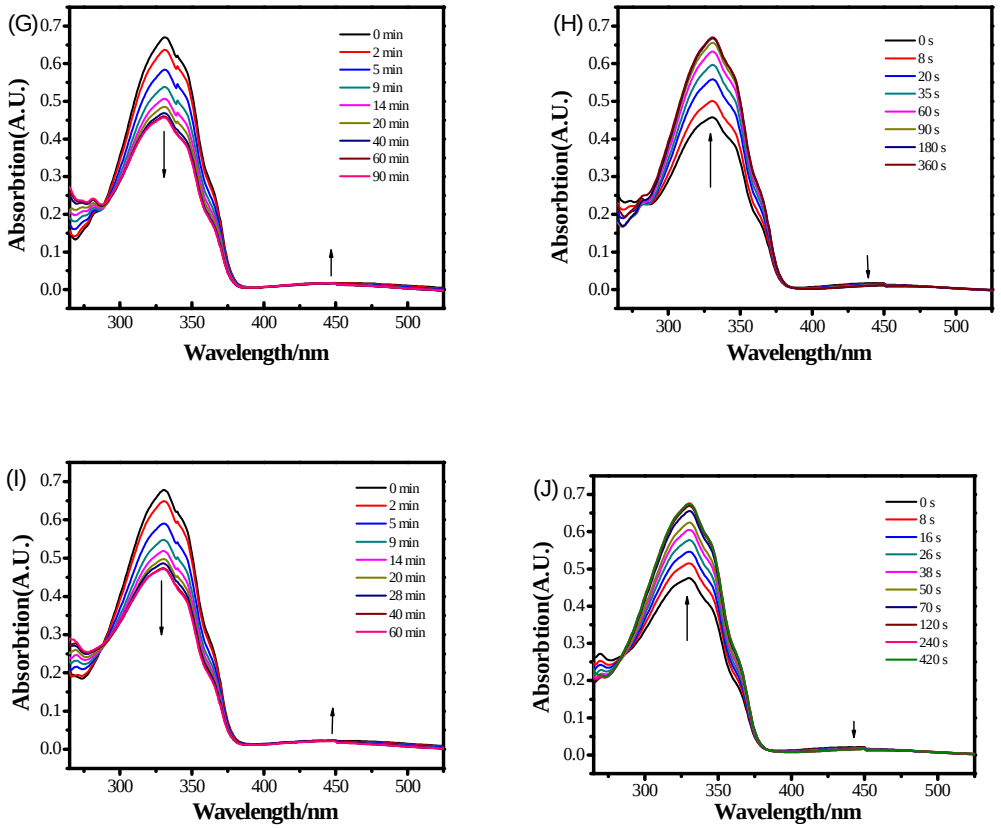




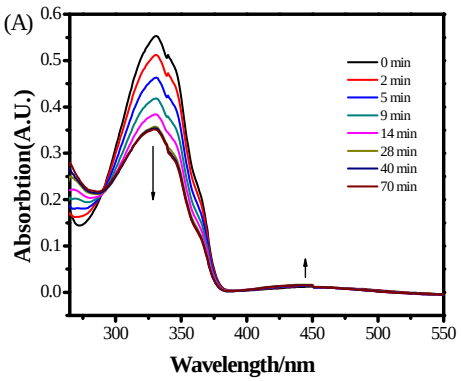
S.Fig. 2. Optical transmittance for ADDEDs monitored at (A) 499 nm, (B) 504 nm, (C) 505 nm, (D) 508 nm, (E) 507nm, and (F) 511 nm for compounds **a**, **b**, **c**, **d**, **e**, and **f**, respectively, between −3.0 V and +3.0 V.

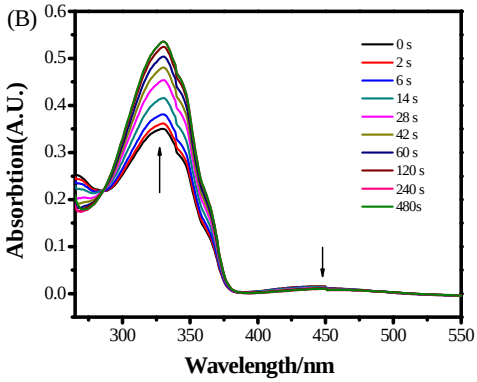
3. UV–vis spectra and spectral changes of compounds a, b, c, e and f in DMF and under electrochromic conditions

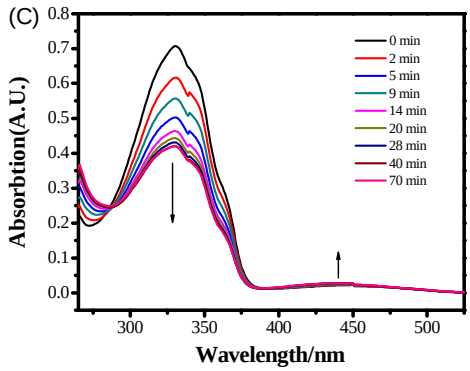


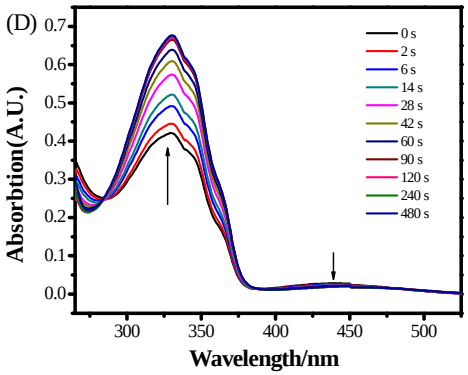


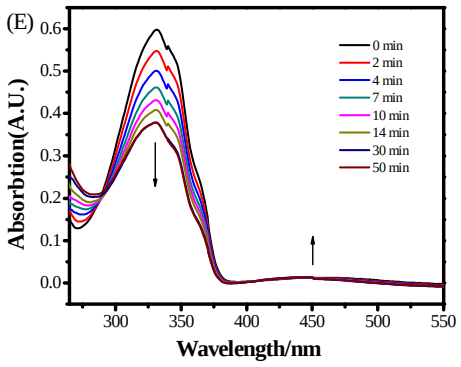
S.Fig. 3. UV–vis spectra and spectral changes of ADDEDs (2.0×10^{-5} mol L^{-1}) in DMF solution : (A) upon irradiation at 365 nm and (B) upon irradiation at 440 nm for compound **a**; (C) upon irradiation at 365 nm and (D) upon irradiation at 440 nm for compound **b**; (E) upon irradiation at 365 nm and (F) upon irradiation at 440 nm for compound **c**; (G) upon irradiation at 365 nm and (H) upon irradiation at 440 nm for compound **e**; (I) upon irradiation at 365 nm and (J) upon irradiation at 440 nm for compound **f**.

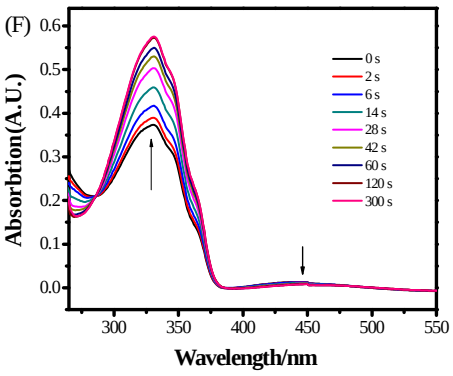

(A)
Absorbtion(A.U.)
Wavelength/nm
0 min
2 min
5 min
9 min
14 min
28 min
40 min
70 min

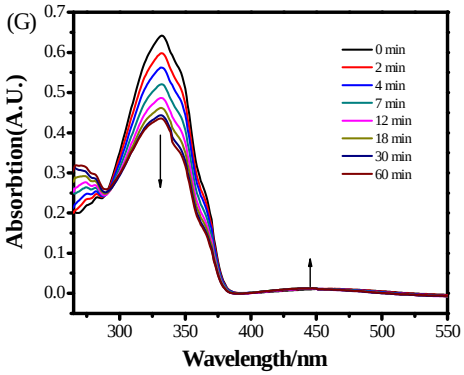

(B)
Absorbtion(A.U.)
Wavelength/nm
0 s
2 s
6 s
14 s
28 s
42 s
60 s
120 s
240 s
480s

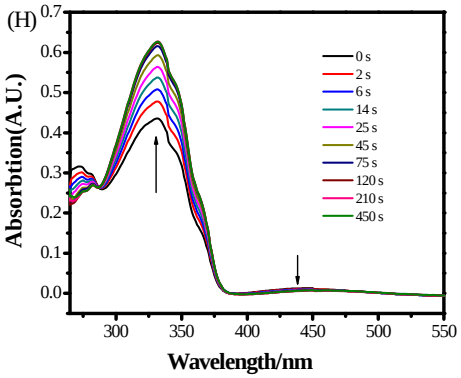

(C)
Absorbtion(A.U.)
Wavelength/nm
0 min
2 min
5 min
9 min
14 min
20 min
28 min
40 min
70 min

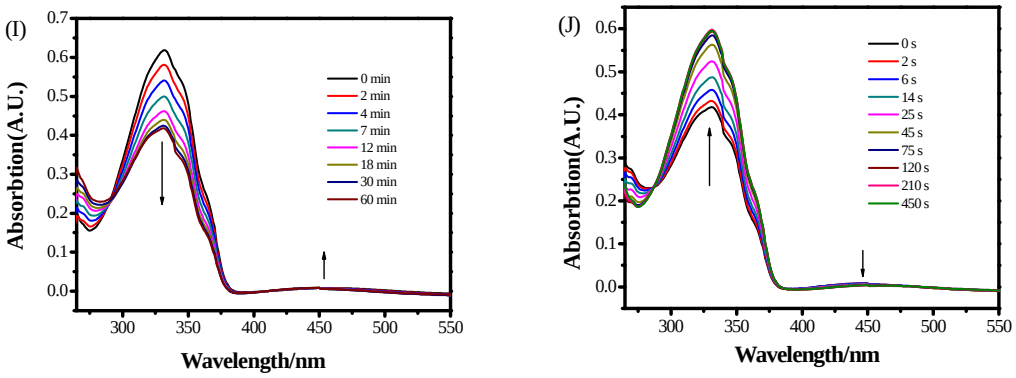

(D)
Absorbtion(A.U.)
Wavelength/nm
0 s
2 s
6 s
14 s
28 s
42 s
60 s
90 s
120 s
240 s
480 s


(E)
Absorbtion(A.U.)
Wavelength/nm
0 min
2 min
4 min
7 min
10 min
14 min
30 min
50 min


(F)
Absorbtion(A.U.)
Wavelength/nm
0 s
2 s
6 s
14 s
28 s
42 s
60 s
120 s
300 s


(G)
Absorbtion(A.U.)
Wavelength/nm
0 min
2 min
4 min
7 min
12 min
18 min
30 min
60 min


(H)
Absorbtion(A.U.)
Wavelength/nm
0 s
2 s
6 s
14 s
25 s
45 s
75 s
120 s
210 s
450 s



S.Fig. 4. UV–vis spectra and spectral changes of ADDEDs (2.0×10^{-5} mol L^{-1}) in TBAP and ferrocene in DMF solution: (A) upon irradiation at 365 nm and (B) upon irradiation at 440 nm for compound **a**; (C) upon irradiation at 365 nm and (D) upon irradiation at 440 nm for compound **b**; (E) upon irradiation at 365 nm and (F) upon irradiation at 440 nm for compound **c**; (G) upon irradiation at 365 nm and (H) upon irradiation at 440 nm for compound **e**; (I) upon irradiation at 365 nm and (J) upon irradiation at 440 nm for compound **f**.