Electronic Supplementary Material (ESI) for Nanoscale Advances.

Supporting Information

Adjusting the charging behavior of TiO_2 with basic surfactants in an apolar medium for electrophoretic display

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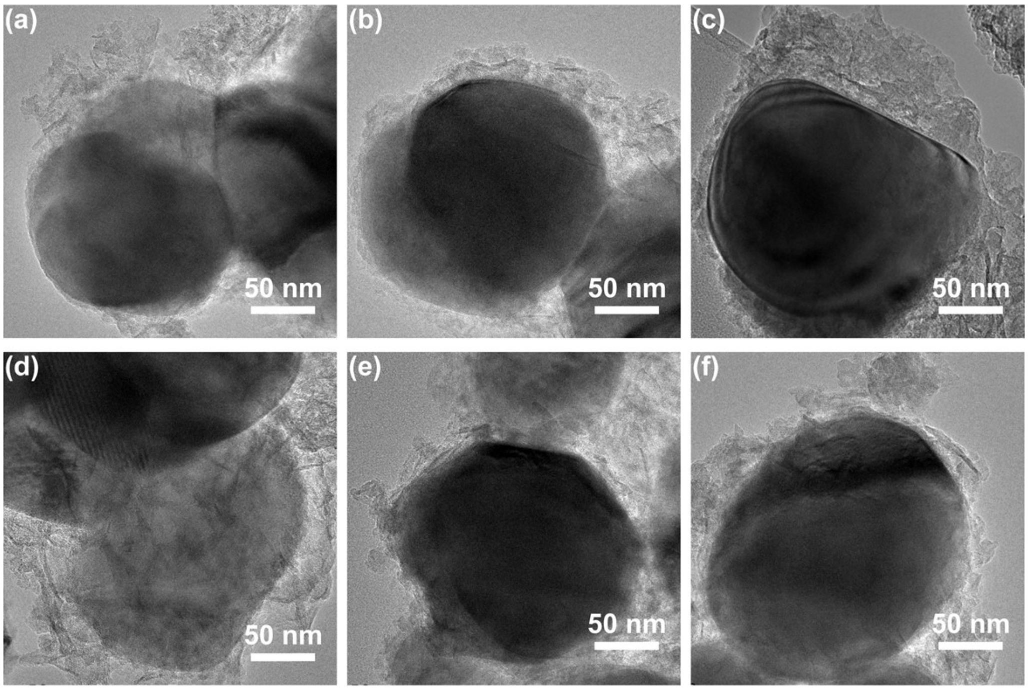

Fig. S1 TEM images of (a) raw TiO_2 and TiO_2 after modified with (b) T161, (c) T151, (d) T154, (e) S17000 and (f) S24000.

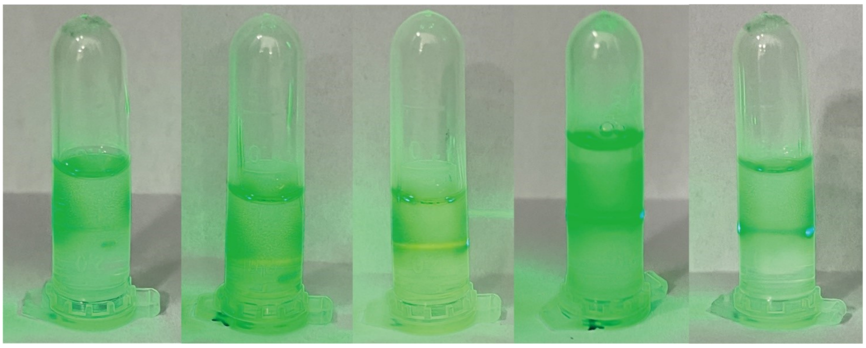

Fig. S2 The optical path under laser irradiation of T161, T151, T154, S17000 and S24000 in Isopar L.

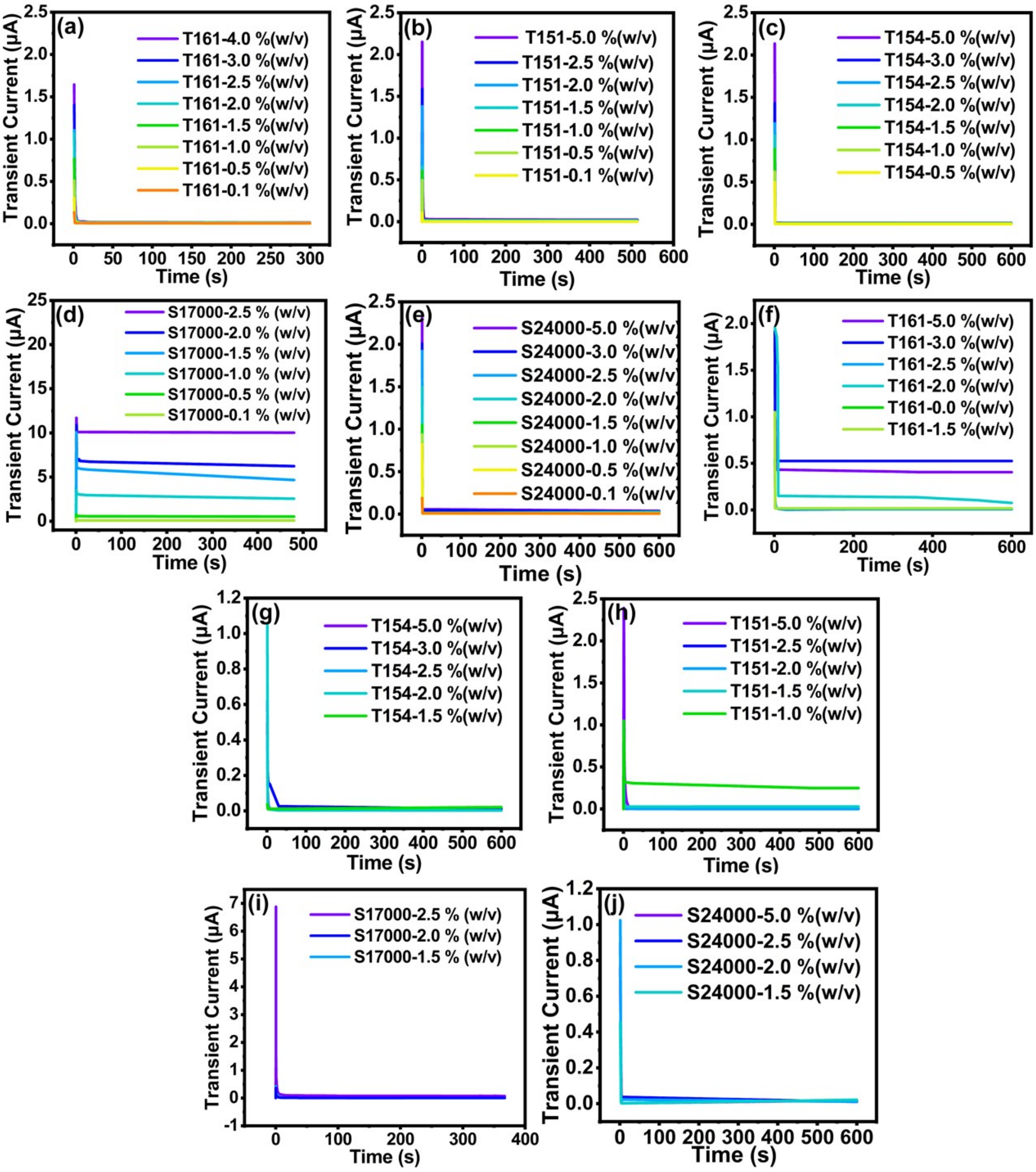

Fig. S3 Transient current diagram of (a)~(e) non-particle dispersions and (f) ~ (j) TiO_2 particle dispersions with different concentrations of surfactants.

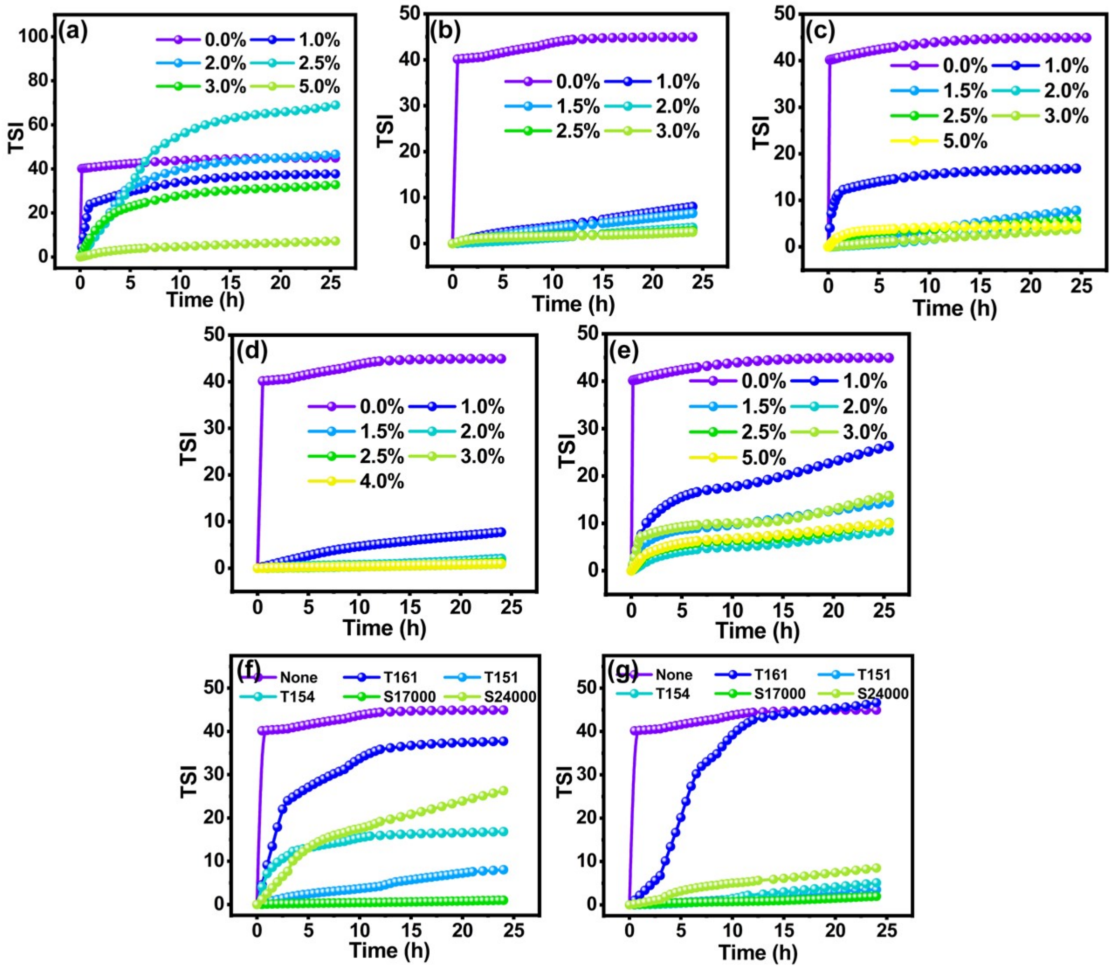

Fig. S4 The change diagram of TSI of TiO_2 modified with (a) T161, (b) T151, (c) T154, (d) S17000 and (e) S24000. The Change diagram of TSI (f) with the same concentration of anchoring groups and (g) with the same concentration of solvated chain.

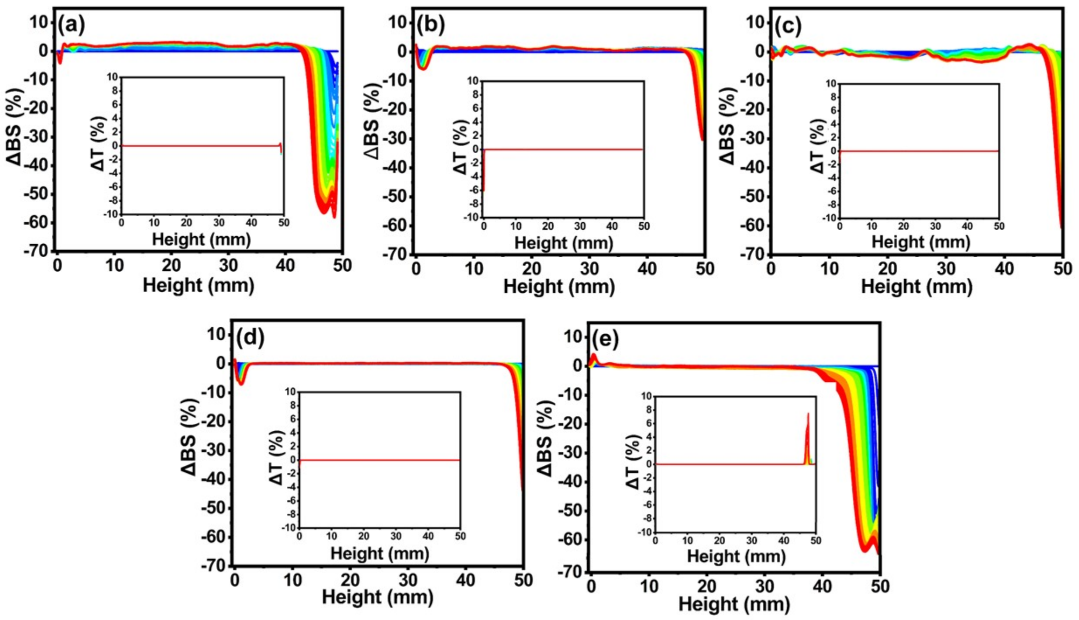

Fig. S5 The change of the backscattering and transmitting light of TiO_2 modified with (a) T161, (b) T151, (c) T154, (d) S17000 and (e) S24000.

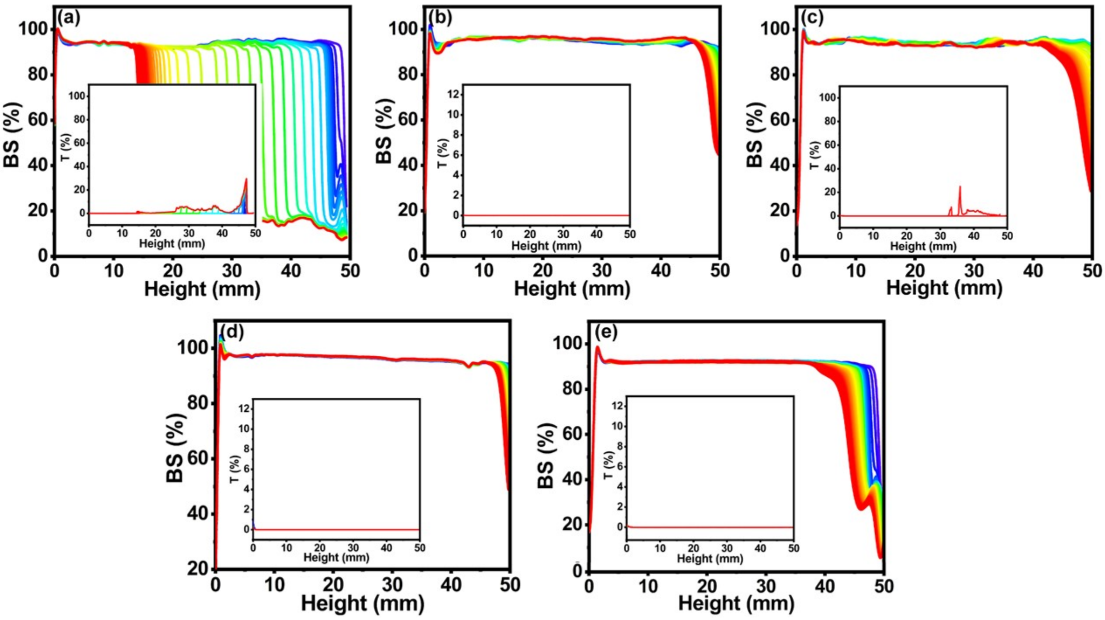

Fig. S6 The values of the backscattering and transmitting light of TiO_2 modified with (a) T161, (b) T151, (c) T154, (d) S17000 and (e) S24000 with the same concentration of solvation chain for every surfactant.

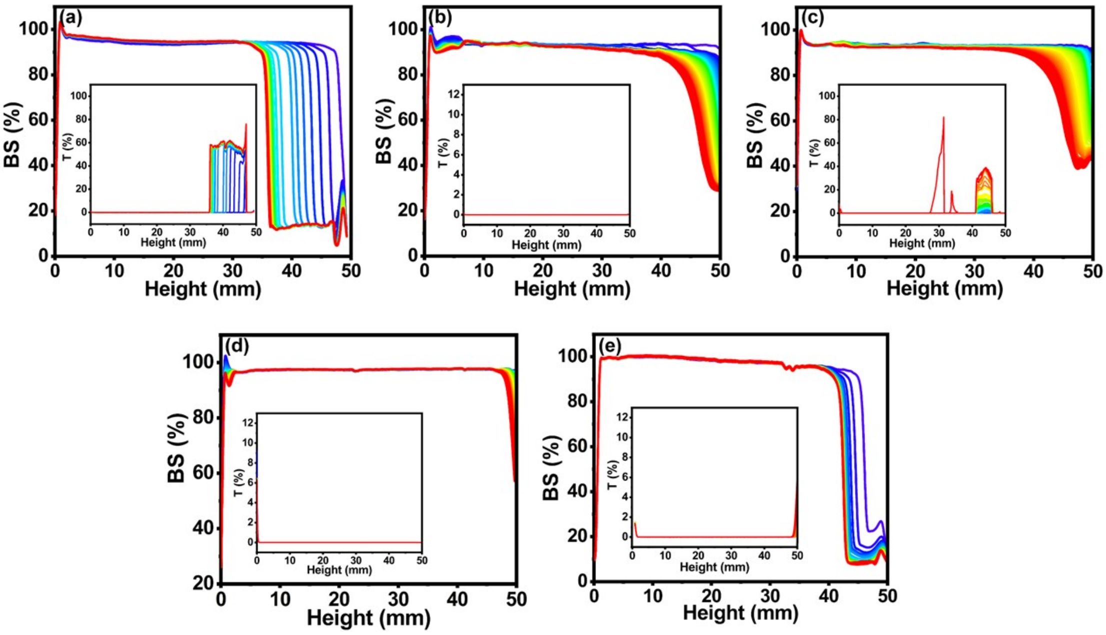

Fig. S7 The values of the backscattering and transmitting light of TiO_2 modified with (a) T161, (b) T151, (c) T154, (d) S17000 and (e) S24000 with the same concentration of anchoring groups for every surfactant.

Table S1 The comparison of the response time of EPDs consisting of electrophoretic particles with different modification methods

No.	White/Black or Colored Particles-Additives	Solvent	Response Time (ms)
1	TiO_2/FeMn Black -Solsperse 17000/AFK 3777 (this work)	Isopar L	166.7
2	TiO_2/Copper Chromite Black -OLOA 5470[1]	Isopar G	176.6
3	TiO_2/FeMn Black -OLOA 11000/SiO_2[2]	Isopar G	187.0
4	TiO_2/Carbon Black -Span 80/OLOA 1200[3]	C_2Cl_4	240.0
5	TiO_2/FeMn Black -CCA/LC[4]	Nonpolar solvent	320.0
6	TiO_2/FeMn Black -CCA[5]	/	480.0
7	TiO_2/Carbon Black -CCA[6]	/	500.0
8	TiO_2/Fe_3O_4 -OLOA 1200[7]	C_2Cl_4	2000.0
9	TiO_2/Organic Pigment -Span 85[8]	C_2HCl_3	3000.0
10	TiO_2/Copper Phthalocyanine -Span 80[9]	C_2Cl_4	5000.0

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