coatings

Supplementary Materials

Preparation and Photochromic Performance of Homogeneous Phase Nitrocellulose Membrane Grafting Spirooxazine Moieties

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1. ^{1}HNMR spectrum of AISO and Peak assignments

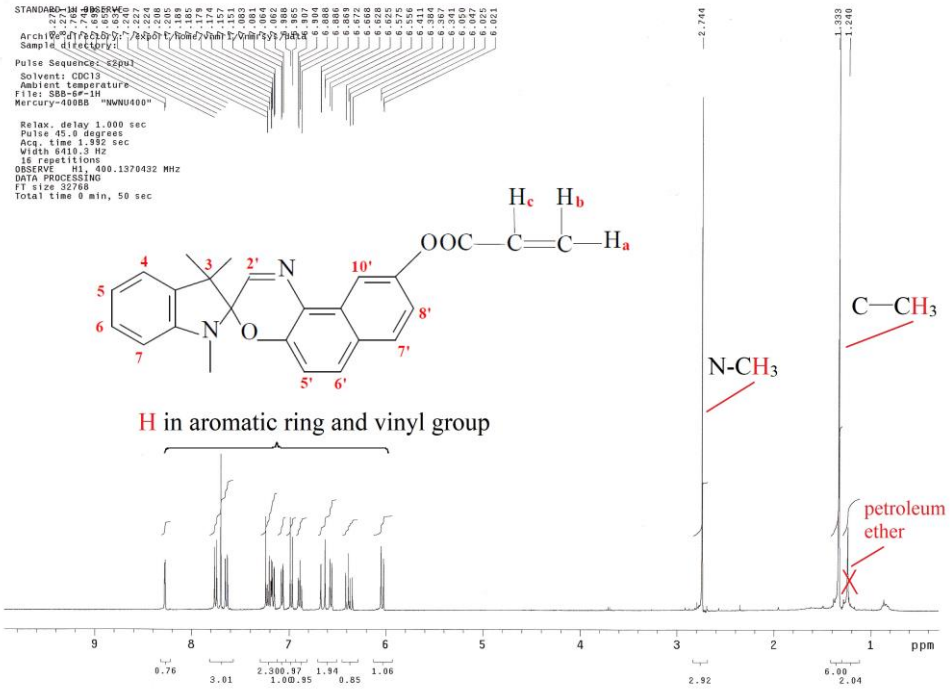


Figure S1. ^{1}HNMR spectrum of AISO (400 MHZ, $CDCl_3$).

Table S1. Peak assignments in the ^{1}HNMR spectrum of AISO.

δ/ppm	Assignment
8.28 (d, $J_{10',8'}$ = 2.0 Hz, 1 H)	10′-H
7.76 (d, $J_{7',8'}$ = 8.8 Hz, 1 H)	7′-H
7.70 (s, 1 H)	2′-H
7.64 (d, $J_{6',5'}$ = 9.2 Hz, 1 H)	6′-H
7.21 (dd, $J_{8',7'}$ = 8.8 Hz, $J_{8',10'}$ = 2.0 Hz, 1 H)	8′-H
7.16 (t, $J_{6,7}$ = 7.6 Hz, $J_{6,5}$ = 8.0 Hz, 1 H)	6-H
7.07 (d, $J_{4,5}$ = 7.6 Hz, 1 H)	4-H

6.98 (d, $J_{5',6'}$ = 9.2 Hz, 1 H)	5′-H
6.89 (t, $J_{5,6}$ = 8.0 Hz, $J_{5,4}$ = 7.6 Hz, 1 H)	5-H
6.64 (d, $J_{a,c}$ = 17.2 Hz, 1 H)	H_a
6.56 (d, $J_{7,6}$ = 7.6 Hz, 1 H)	7-H
6.37 (dd, $J_{c,a}$ = 17.2 Hz, $J_{c,b}$ = 10.4 Hz, 1 H)	H_c
6.03 (d, $J_{b,c}$ = 10.4 Hz, 1 H)	H_b
2.74 (s, 3 H)	N-CH_3
1.33 (s, 6 H)	C-$(CH_3)_2$

Note: s is single peak; d, double peak; t, triple peak.

2. ^{13}CNMR spectrum of AISO and Peak assignments

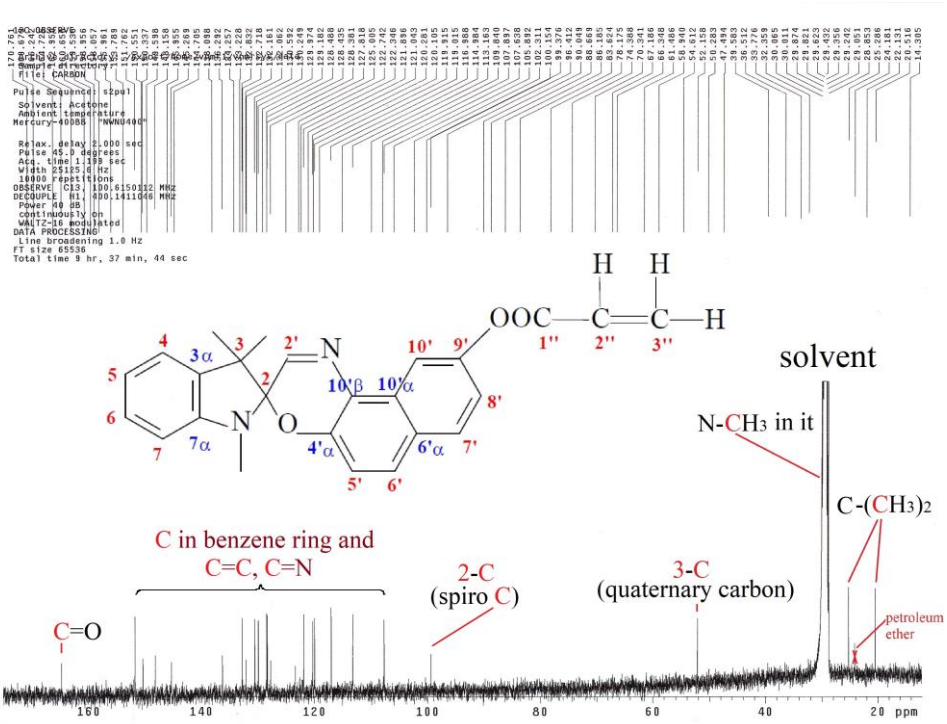


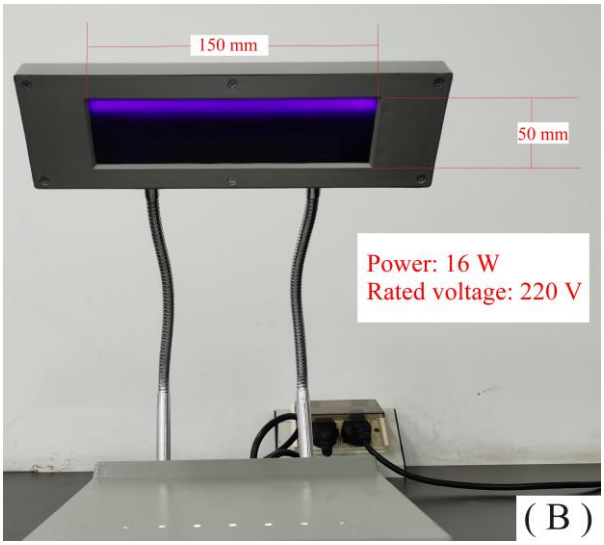
Figure S2. ^{13}CNMR spectrum of AISO (400 MHZ, Acetone-*d6*).

Table S2. Peak assignments in the ^{13}CNMR spectrum of AISO.

Measured Value in This Experiment		Reference Values of Similar Compounds	
δ/ppm	**Assignment**	**$\delta_{reference}$/ppm**	**$\Delta = \delta - \delta_{reference}$**
164.73	1″-C (C=O)	—	—
151.76	9′-C	158.5	−6.74
150.34	2′-C (C=N)	150.9	−0.56
148.16	4′α-C	147.6	0.56
145.27	10′β-C	144.9	0.37
136.29	7α-C	135.8	0.49
133.23	3″-C (CH_2=)	—	—
132.83	6′α-C	131.9	0.93
130.59	7′-C	130.1	0.49
129.97	6′-C	129.5	0.47
128.49	2″-C (–CH=)	—	—
128.38	6-C	128.1	0.28
127.82	3α-C	126.9	0.92
122.74	10′α-C	123.0	−0.26
121.90	4-C	121.5	0.4
120.28	5-C	120.0	0.28
119.92	10′-C	107.2	12.72
116.99	8′-C	116.8	0.19
113.16	5′-C	113.1	0.06
107.64	7-C	107.2	0.44
99.38	2-C	98.8	0.58
52.16	3-C	51.9	0.29
29.63	N–CH_3	29.7	–0.07
25.29; 20.52	C–$(CH_3)_2$	25.4; 20.8	−0.11; −0.28

Note: The $\delta_{reference}$ is quoted from the literature [1], and the spectra were recorded on a Varian VXR-300 spectrometer, using TMS as internal standard, using $CDCl_3$ as solvent. The symbols "—" means there is no corresponding data in the references or there is no corresponding carbon atom in the corresponding compound.

3. The UV light source and the test scenarios



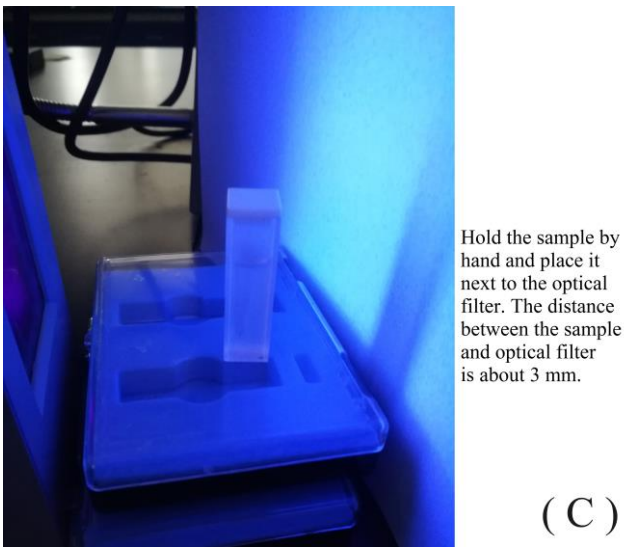


Figure S3. The UV light source and the test scenarios. (**A**) a ZF7c UV analysis apparatus, (**B**) the optical filter, (**C**) the test scenarios.

References

1. Kakishita, T.; Matsumoto, K.; Kiyotsukuri, T.; Matsumura, K.; Hosoda, M. Synthesis and NMR study of 9′-substituted spiroindolinonaphthoxazine derivatives. *J. Heterocyclic Chem.* **1992**, *29*, 1709–1715, doi:10.1002/jhet.5570290706.