

## Supporting Information

### Network Structure of Swollen Iodine-Doped Poly (Vinyl Alcohol) Amorphous Domain as Characterized by Low Field NMR

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The comparison of the crystallinity of swollen and dry films.

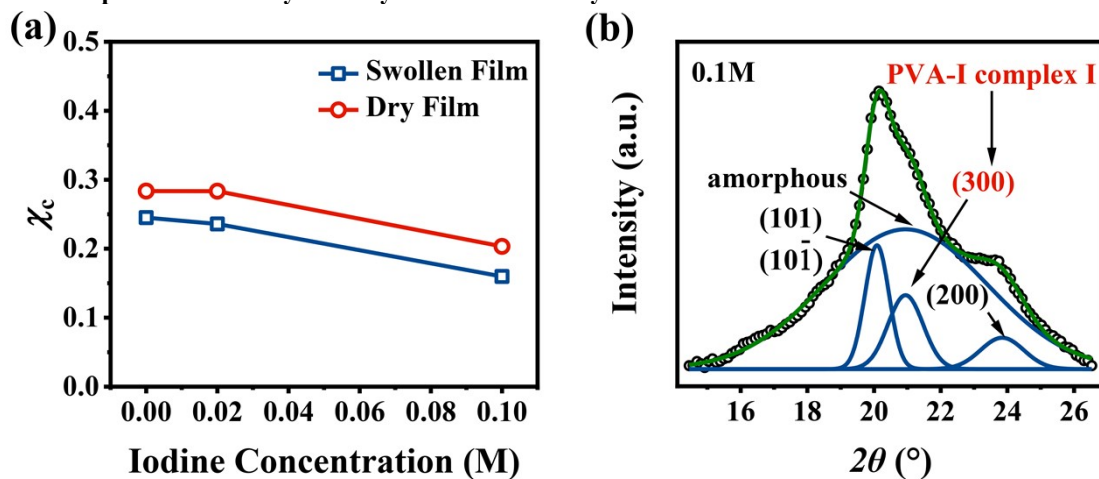


Fig. S1. (a)  $\chi_c$  of swollen and dry dyeing films as a function of iodine concentration. (b) The multi-peak fitting of the 1D WAXS curves of the swollen dyeing film (0.1M), the wavelength of this experiment is 0.154 nm.

$T_g$  of dry and swollen PVA films.

The swelling degree ( $SD$  (%)) is calculated by:

$$SD (\%) = \frac{w(sw)}{w(0)} * 100\% \quad (1)$$

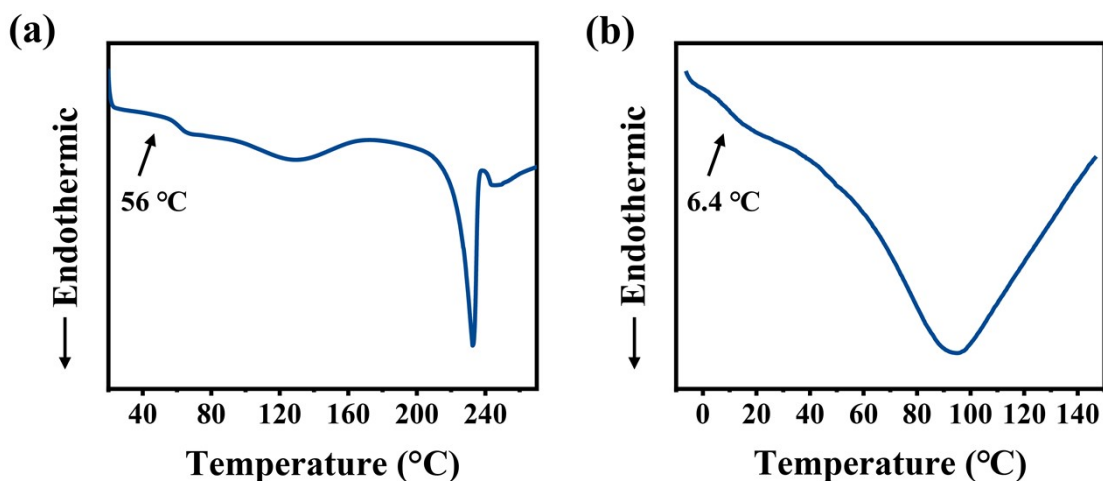


Fig. S2. DSC scans of sample (a) pure PVA film before swelling and (b) swollen PVA film with swelling degree ( $SD$ ) (%) = 115%.

The lattice parameters of different types of crystals.

The  $d$ -spacing was calculated as follows:<sup>1</sup>

$$d = \frac{\lambda}{2\sin \theta} \quad (2)$$

Table S1. Lattice spacing of diffraction peaks for PVA crystal (0-0.1 M).

Crystal index	$2\theta$ ( $^\circ$ )	$d$ ( $\text{\AA}$ )
100	11.6	7.62
001	15.21	5.82
101/101	19.64	4.51

200	23.15	3.84
201/201	27.99	3.18

**Table S2.** Lattice spacing of diffraction peaks for PVA-complex I (0.1 M-1 M).

Crystal index	$2\theta$ (°)	$d$ (Å)
100	7.78	11.35
002	13.76	6.43
300	20.98	4.23
303/404/204	31.4	2.85

**Table S3.** Lattice spacing of diffraction peaks for PVA-complex II (1 M-5 M).

Crystal index	$2\theta$ (°)	$d$ (Å)
100	8.96	9.86
001	11.6	7.62
101/101	14.69	6.02
200	18.2	4.87
201/201	21.58	44.11
002	23.15	3.84
102	25.15	3.54
300	27.58	3.23
301/202	29.95	2.98

## Reference

1. W. H. Bragg and W. L. Bragg, *Proceedings of the Royal Society of London. Series A, Containing Papers of a Mathematical and Physical Character*, 1913, **88**, 428-438.