

# $\beta$ -Cyclodextrin based Poly (vinyl Alcohol) Fibers for Sustained Release of Fragrances

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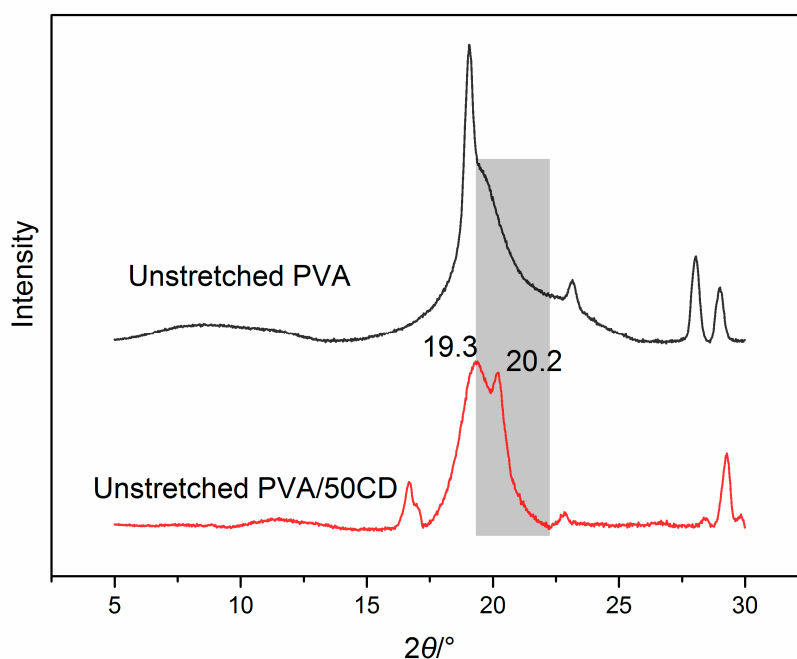
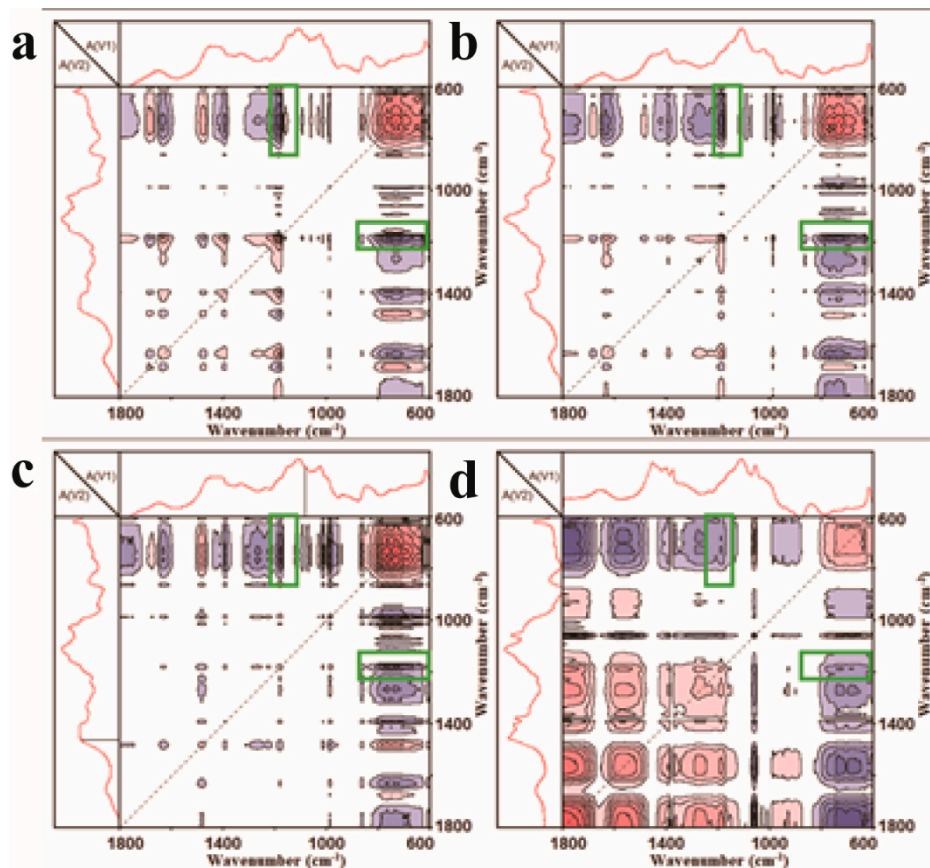
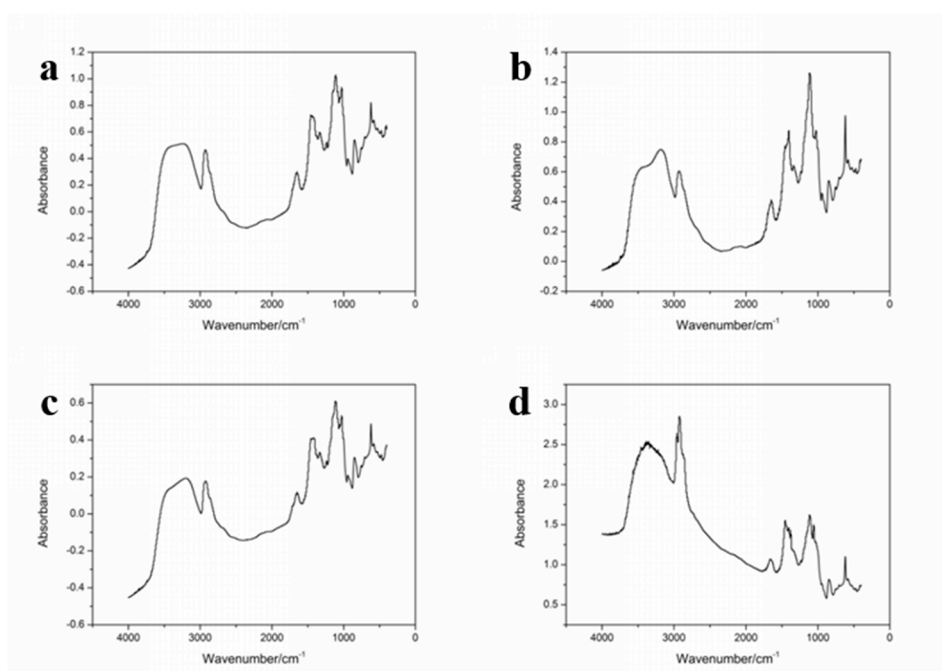


Figure S1. XRD of unstretched PVA and PCA/75CD fibers



**Figure S2.** Synchronous FTIR spectra calculated from the temperature-dependent spectra of 25 – 77°C in the range of 1800-600 $\text{cm}^{-1}$ . a)  $\beta$ -cyclodextrin-*cis*-jasmonone host-guest inclusion complex; b)  $\beta$ -cyclodextrin-*cis*-jasmonone blend; c)  $\beta$ -cyclodextrin-citronella host-guest inclusion complex; d)  $\beta$ -cyclodextrin-citronella blend. Pink and blue areas represent the positive and negative correlation intensity, respectively.



**Figure S3.** 1D-ATR-FTIR spectra of the a)  $\beta$ -cyclodextrin-*cis*-jasmonone host-guest inclusion complex; b)  $\beta$ -cyclodextrin- *cis*-jasmonone blend; c)  $\beta$ -cyclodextrin-citronella host-guest inclusion complex; d)  $\beta$ -cyclodextrin-citronella blend.

**Table S1.** Full width half maxima (FWHM) of the as-prepared and formalized fibers.

	Full width half maxima (FWHM) /cm <sup>-1</sup>			
2 $\theta$ /°	11.4°	19.4°	20.5°	22.5°
PVA	0.832	1.033	-	0.888
PVA/50CD	0.301	0.810	0.383	0.463
PVA/75CD	0.800	0.856	0.539	0.627
PVA/100CD	0.643	0.659	0.383	0.661
PVA/GA	0.798	1.015	-	1.209
PVA/50CD/GA	0.194	0.372	-	0.218
PVA/75CD/GA	1.065	0.892	-	0.854
PVA/100CD/GA	0.322	0.936	-	0.814

**Table S2.** Crystallite dimension of the as-prepared and formalized fibers.

	Crystallite dimension			
2 $\theta$ /°	11.4°	19.4°	20.5°	22.5°
PVA	97	79	-	92
PVA/50CD	283	100	219	180
PVA/75CD	101	95	153	131
PVA/100CD	126	124	142	124
PVA/GA	101	80	-	67
PVA/50CD/GA	482	97	-	419
PVA/75CD/GA	76	91	-	96
PVA/100CD/GA	262	87	-	101

**Table S3.** *d*-spacing of the as-prepared fibers derived from XRD

<i>d</i> -spacing/Å	11.4°	19.4°	20.5°	22.5°
PVA	7.65	4.57	-	3.92
PVA/50CD	7.75	4.58	4.37	3.90
PVA/75CD	7.53	4.60	4.39	3.92
PVA/100CD	7.11	4.60	4.39	3.90
PVA/GA	7.72	4.60	-	3.83
PVA/50CD/GA	7.67	4.67	-	3.95
PVA/75CD/GA	7.54	4.68	-	3.90
PVA/100CD/GA	7.65	4.63	-	3.94

**Table S4.** The melting enthalpy and crystallization of PVA and PVA/CD fibers

	PVA	PVA/50CD	PVA/75CD	PVA/100CD
Melting Enthalpy $\Delta H_f$ /J/g	50.8	28.91	13.52	3.98
Crystallization	30.2%	17.2%	8.0%	2.4%

**Table S5.** The melting enthalpy and crystallization of PVA/GA and PVA/CD/GA fibers

	PVA/GA	PVA/50CD/GA	PVA/75CD/GA	PVA/100CD/GA
Melting Enthalpy $\Delta H_f$ /J/g	49.47	22.99	22.17	8.55
Crystallization	29.4%	13.7%	13.2%	5.1%

**Table S6.** Shrinkage of PVA/75CD crosslinked by different concentration of GA

Concentration g/L	10	15	20	25
Rate of shrinkage/%	36.8±2.3	28.7±3.1	19.5±2.6	/