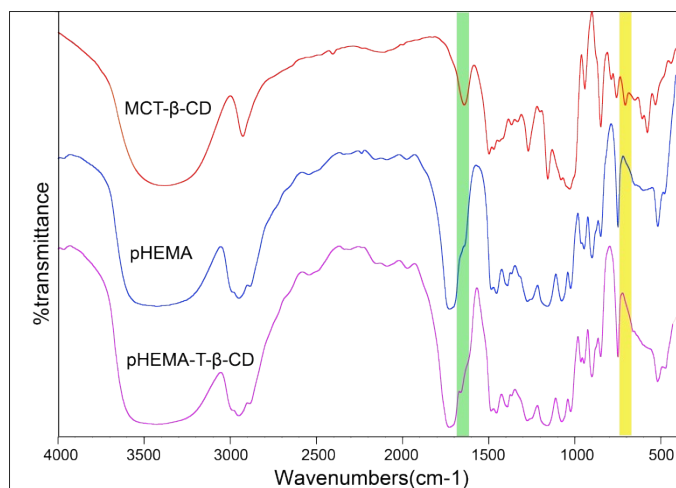
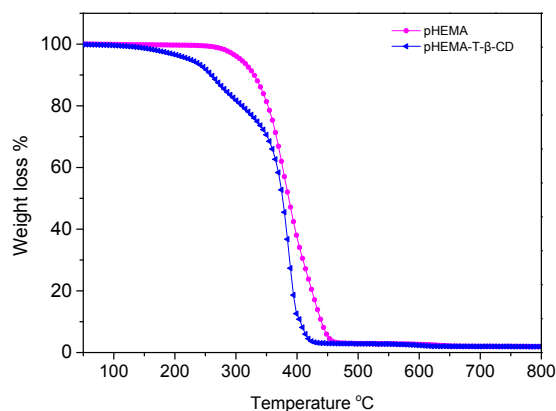


## **Supporting Information:**

**pHEMA hydrogels with pendant triazinyl- $\beta$ -cyclodextrin as an efficient and recyclable reservoir for loading and release of plant-based mosquito repellents: A new aqueous mosquito repellent formulation**



**Figure S1.** FTIR spectrum of MCT- $\beta$ -CD, pHEMA hydrogel and pHEMA-T- $\beta$ -CD hydrogels.



**Figure S2.** Thermogravimetric analysis of pHEMA and pHEMA-T- $\beta$ -CD hydrogels

**Table S1.** Solubility of *trans*-cinnamaldehyde, geraniol and methyl salicylate at different concentration of  $\beta$ -CD

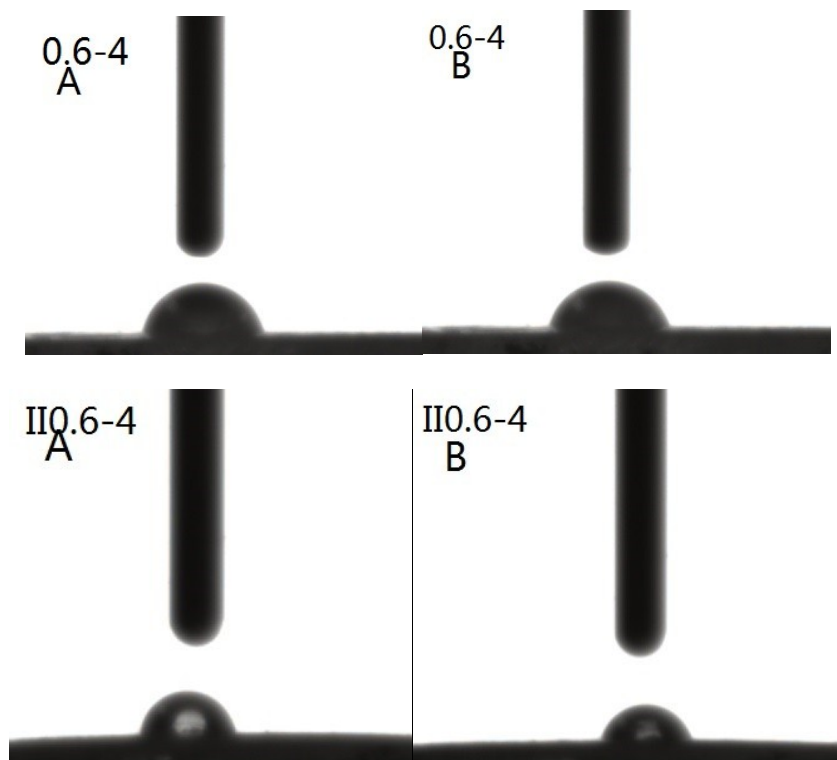
$\beta$ -CD (mol/L)	<i>trans</i> -cinnamaldehyde (mol/L)	Geraniol (mol/L)	methyl salicylate (mol/L)
0	$0.0108 \pm 0.0002^a$	$0.00381 \pm 0.00002$	$0.00460 \pm 0.00004$
0.002	$0.0119 \pm 0.0002$	$0.00511 \pm 0.00001$	$0.00552 \pm 0.00002$
0.004	$0.0126 \pm 0.0001$	$0.00721 \pm 0.00001$	$0.00617 \pm 0.00006$
0.006	$0.0133 \pm 0.0003$	$0.00943 \pm 0.00002$	$0.00750 \pm 0.00004$
0.008	$0.0142 \pm 0.0002$	$0.0118 \pm 0.0001$	$0.00859 \pm 0.00002$
0.01	$0.0154 \pm 0.0001$	$0.0139 \pm 0.0002$	$0.00980 \pm 0.00002$
0.012	$0.0162 \pm 0.0002$	$0.0152 \pm 0.0001$	$0.0112 \pm 0.0001$

<sup>a)</sup> Values are the mean $\pm$ SEM of triplicate.

**Table S2.** The amount of T- $\beta$ -CD fixed on hydrogels

Hydrogel sample	The average amount of T- $\beta$ -CD ( $10^{-1}$ mmol/g)	The total amount of T- $\beta$ -CD ( $10^{-1}$ mmol)
0.2-1	$1.226 \pm 0.047^a$	$0.133 \pm 0.005$
0.2-2	$1.183 \pm 0.019$	$0.510 \pm 0.008$
0.2-3	$1.129 \pm 0.012$	$1.091 \pm 0.011$
0.2-4	$1.139 \pm 0.003$	$2.015 \pm 0.005$
0.4-1	$0.927 \pm 0.003$	$0.215 \pm 0.016$
0.4-2	$0.937 \pm 0.008$	$0.862 \pm 0.007$
0.4-3	$0.871 \pm 0.006$	$1.797 \pm 0.013$
0.4-4	$0.898 \pm 0.002$	$3.392 \pm 0.008$
0.6-1	$0.836 \pm 0.018$	$0.284 \pm 0.006$
0.6-2	$0.794 \pm 0.011$	$1.071 \pm 0.014$
0.6-3	$0.781 \pm 0.016$	$2.360 \pm 0.046$
0.6-4	$0.779 \pm 0.007$	$4.314 \pm 0.039$
II-0.6-4	$0.654 \pm 0.006$	$3.691 \pm 0.033$

<sup>a)</sup> Values are the mean $\pm$ SEM of triplicate.

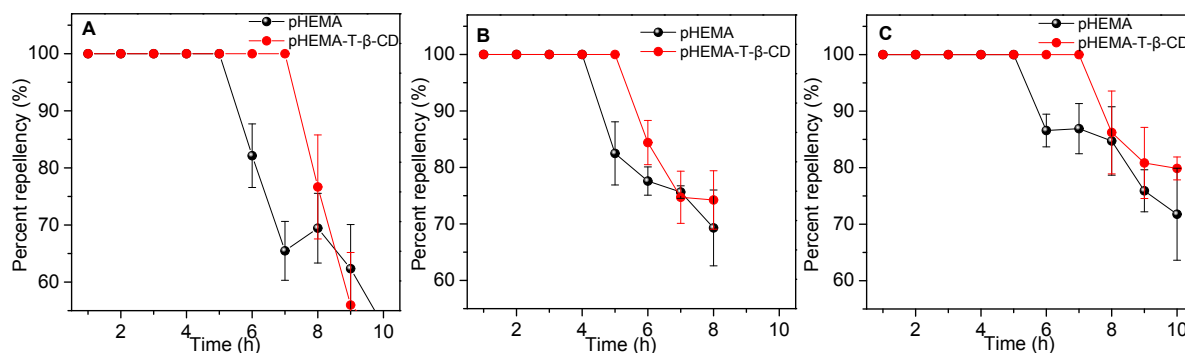


**Figure S3** Contact angle measurements

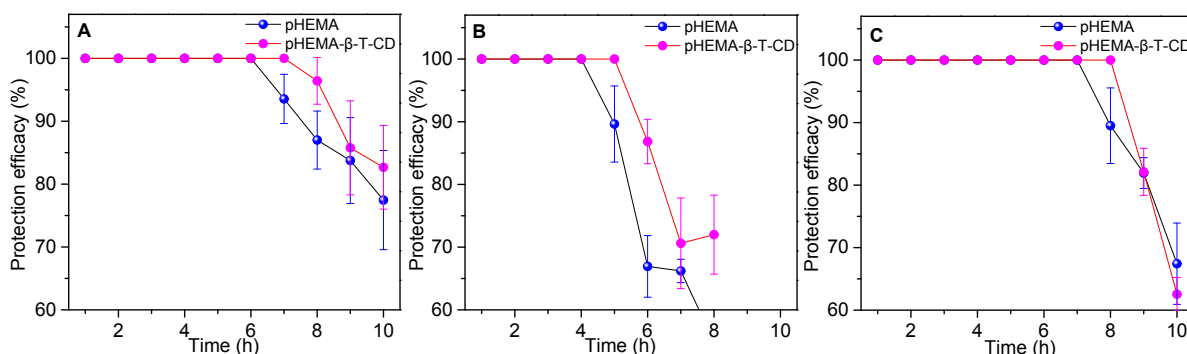
**Table S3.** The swelling ratio of hydrogels

Hydrogel sample	The swelling ratio of pHEMA hydrogels (%)	The swelling ratio of pHEMA-T- $\beta$ -CD hydrogels (%)
0.2-1	68.2 $\pm$ 0.2 <sup>a</sup>	66.0 $\pm$ 0.1
0.2-2	67.4 $\pm$ 0.2	65.4 $\pm$ 0.2
0.2-3	67.1 $\pm$ 0.4	65.2 $\pm$ 0.5
0.2-4	66.7 $\pm$ 0.2	64.3 $\pm$ 0.3
0.4-1	67.8 $\pm$ 0.2	65.7 $\pm$ 0.3
0.4-2	66.3 $\pm$ 0.3	64.4 $\pm$ 0.2
0.4-3	66.2 $\pm$ 0.2	64.3 $\pm$ 0.2
0.4-4	66.1 $\pm$ 0.2	64.0 $\pm$ 0.4
0.6-1	66.6 $\pm$ 0.2	64.6 $\pm$ 0.1
0.6-2	66.7 $\pm$ 0.3	64.7 $\pm$ 0.3
0.6-3	65.6 $\pm$ 0.2	63.5 $\pm$ 0.3
0.6-4	65.3 $\pm$ 0.2	63.5 $\pm$ 0.6
II-0.6-4	55.5 $\pm$ 0.3	53.4 $\pm$ 0.3

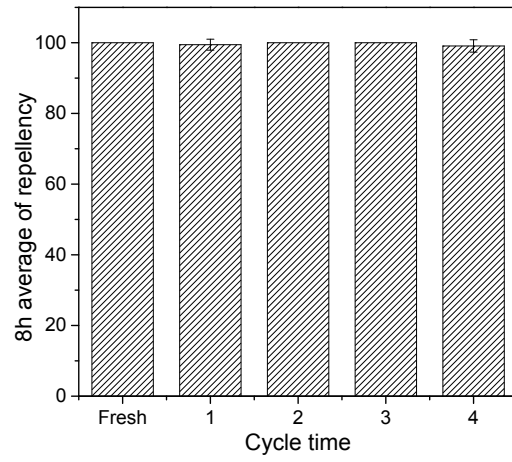
<sup>a</sup>) Values are the mean $\pm$ SEM of triplicate.



**Figure S4.** Percent repellency of *trans*-cinnamaldehyde (A), geraniol (B), and methyl salicylate (C) loaded in II0.6-4 pHEMA-T- $\beta$ -CD hydrogels and pHEMA hydrogels (as control).



**Figure S5.** Protection efficacy of *trans*-cinnamaldehyde (A), geraniol (B), and methyl salicylate (C) loaded in II0.6-4 pHEMA-T- $\beta$ -CD hydrogels and pHEMA hydrogels (as control).



**Figure S6.** Recycle numbers over II0.6-4 pHEMA-T-β-CD hydrogels loaded with methyl salicylate.