

## ELECTRONIC SUPPLEMENTARY INFORMATION

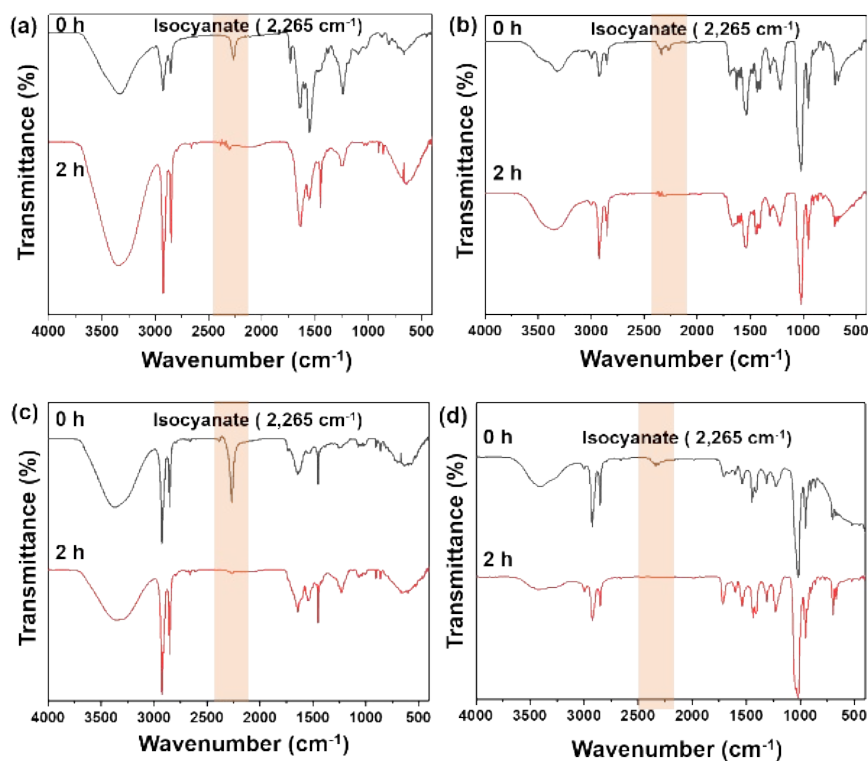
### Shining a new light on the structure of polyurea/polyurethane materials

Piangtawan Phoungtawee, Daniel Crespy\*

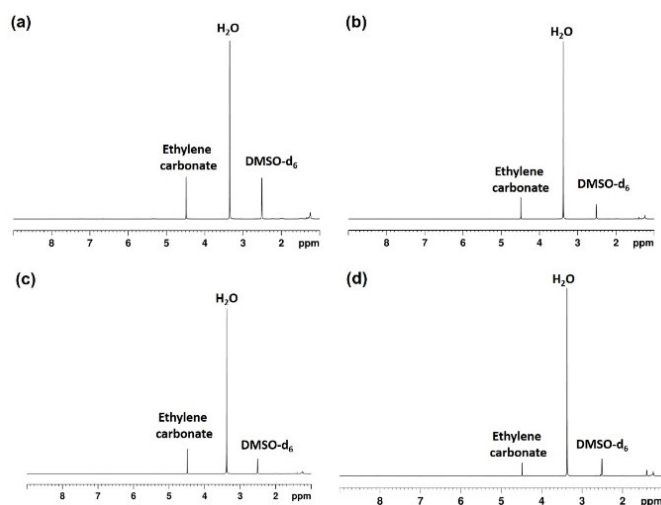
Department of Materials Science and Engineering, School of Molecular Science and Engineering,

Vidyasirimedhi Institute of Science and Technology (VISTEC), Rayong 21210, Thailand

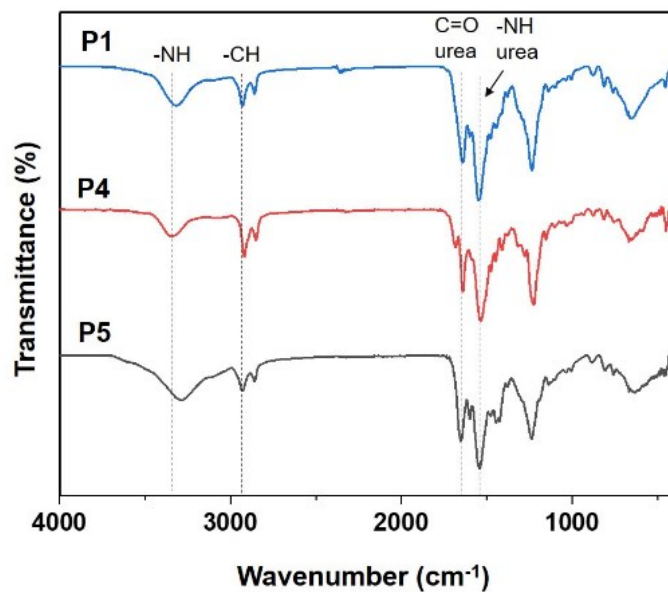
\*E-mail: [daniel.crespy@vistec.ac.th](mailto:daniel.crespy@vistec.ac.th)



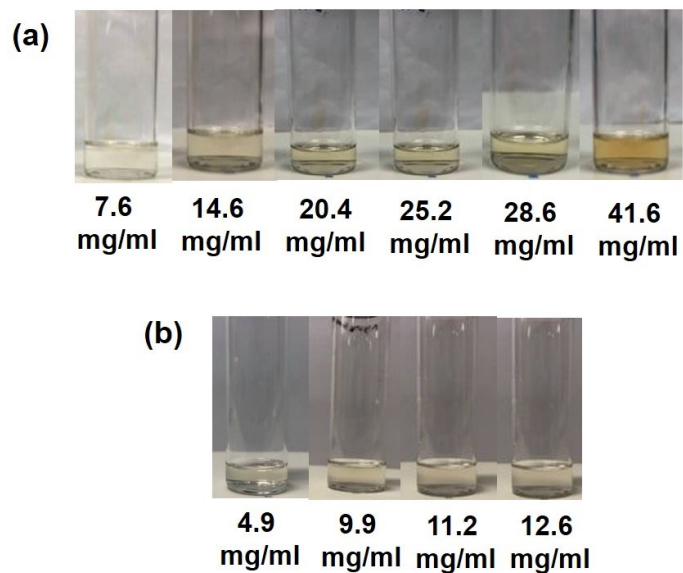
**Fig. S1** FTIR spectra of polyurea nanocapsules (a: P2, b: P5) or polyurethane nanocapsules (c: P6, d: P7) prepared in water-in-oil (a,c) and in DMSO-in-oil miniemulsions (b,d).



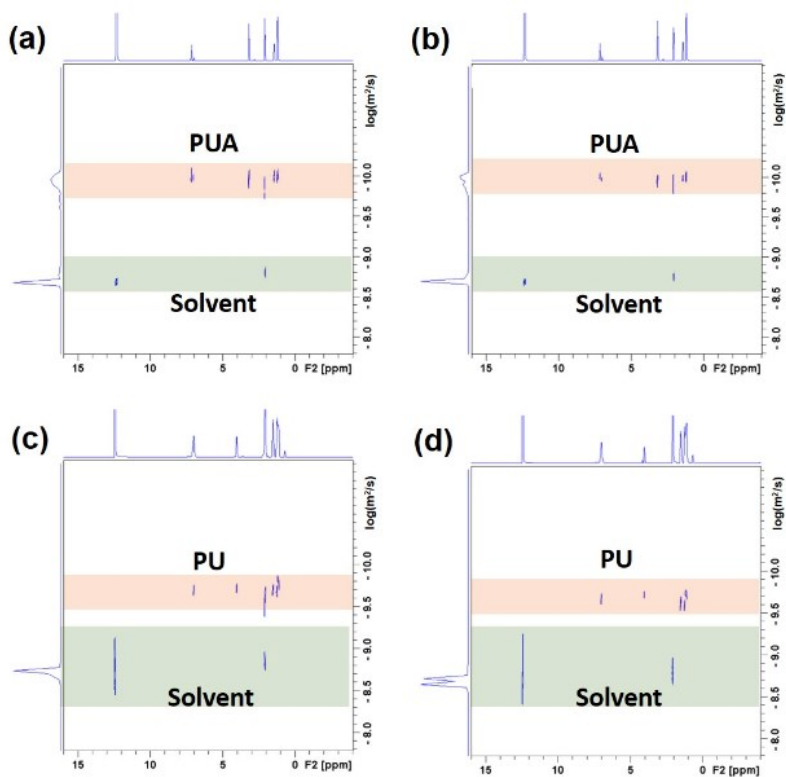
**Fig. S2**  $^1\text{H}$  NMR spectra of the concentrated supernatant after centrifugation of polyurea (a: P2, b: P5) or polyurethane nanocapsules (c: P6, d: P7) prepared in water-in-oil (a,c) and in DMSO-in-oil miniemulsions (b,d).



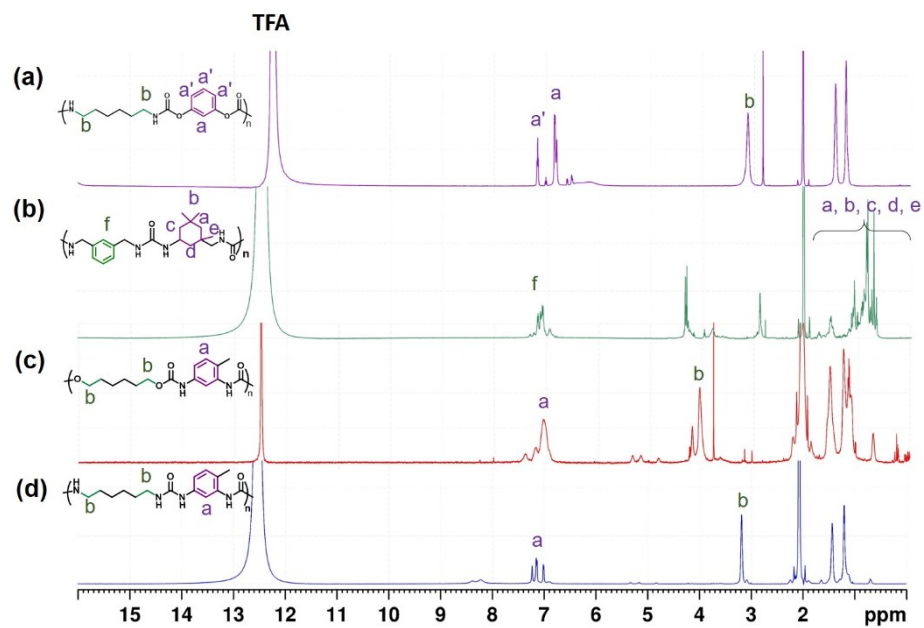
**Fig. S3** FT-IR spectra of polyurea (P1,4-5) nanocapsules



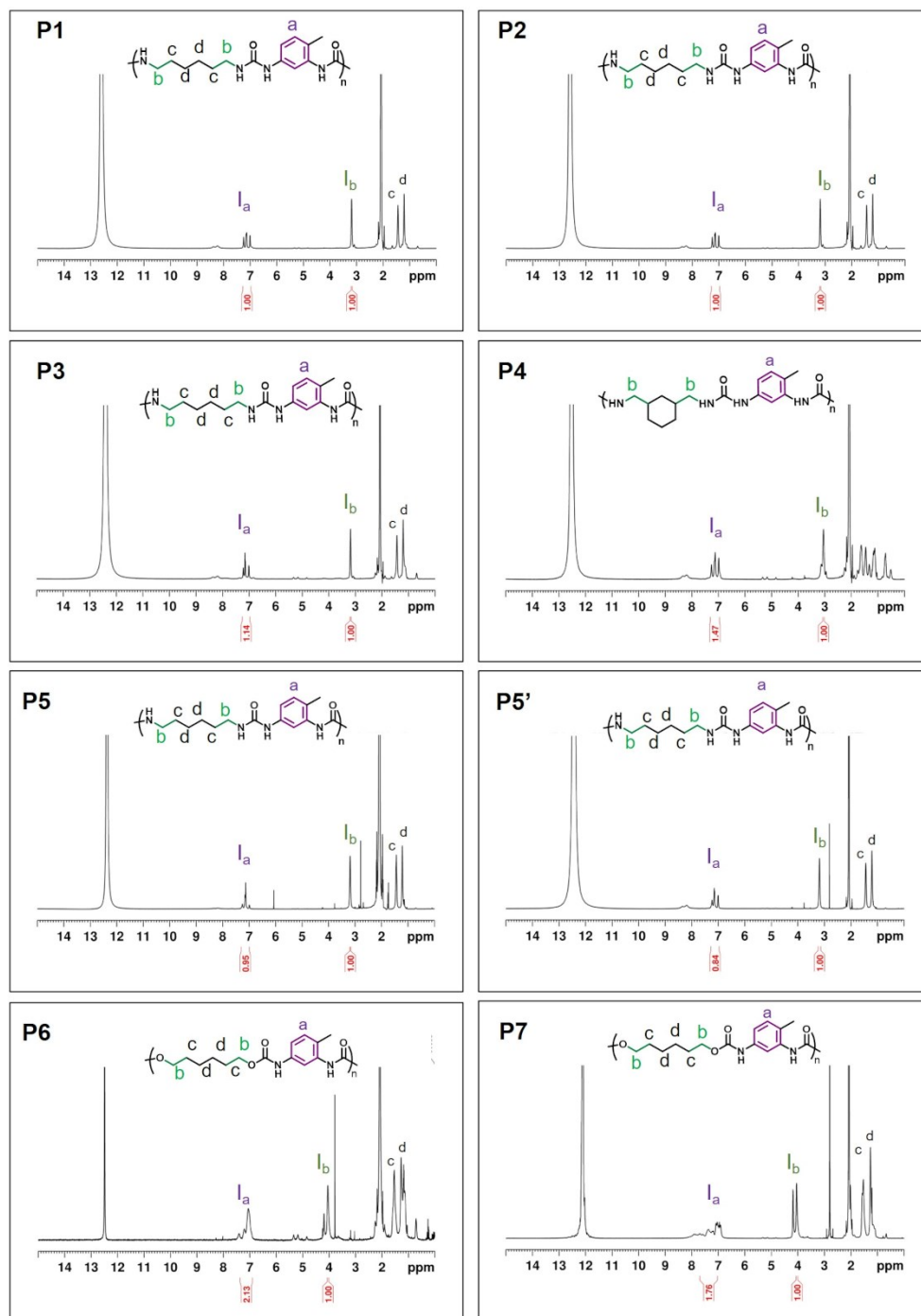
**Fig. S4.** Photographs of polyurea (a) and polyurethane (b) solutions in acetone- $d_6$ :TFA (40:60 mol%) at various concentrations.



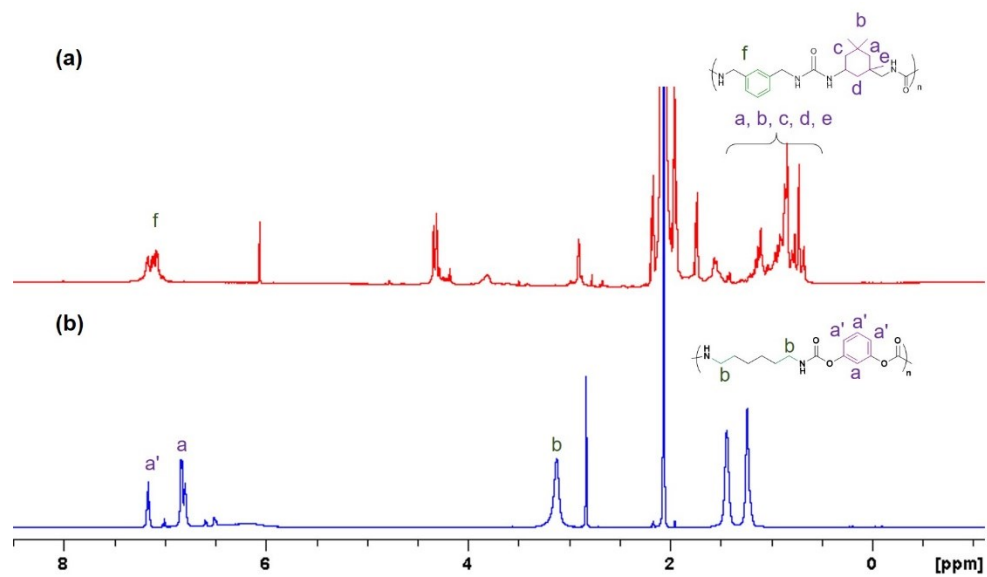
**Fig. S5**  $^1\text{H-NMR}$  DOSY spectra of polyurea (a-b, P2) and polyurethane (c-d, P6) nanocapsules 10 min (a,c) and 50 min (b,d) after their dissolution in acetone- $d_6$ /TFA.



**Fig. S6**  $^1\text{H-NMR}$  spectra of **a**: polyurethane coating **b**: polyurea microcapsules **c**: polyurethane nanocapsules and **d**: polyurea nanocapsules in acetone- $\text{d}_6$ :TFA (40:60 mol%).



**Fig. S7**  $^1\text{H-NMR}$  spectra of polyurea/polyurethane nanocapsules/nanoparticles (entry P1-7) dissolved in acetone- $\text{d}_6$  :/TFA.



**Fig. S8** <sup>1</sup>H-NMR spectra of **a**: polyurea microcapsules prepared by reaction between IPDI and XDA. **b**: polyurethane coating prepared by the reaction between resorcinol and HMDI. Both spectra were obtained in acetone-d<sub>6</sub>:TFA mixture (40:60).