Electronic Supplementary Material (ESI) for RSC Advances
This journal is © The Royal Society of Chemistry 2016

Supplementary Material

Investigation on polyvinyl-alcohol-based rapidly gelling hydrogels for containment of hazardous chemicals

Le Yuan[a], Lijun Ren[b], Xingtao Tian[b], Zhiping Huang[b], YanHua Xiao[b], Sichen Wei[a], Zhihua Wang*[,a]

Table S1 Experimental variables used for the preparation of the PVA-borax hydrogels

PVA Concentration (mg/mL)	Borax Concentration (mg/mL)	PVA content (wt%) in hydrogels	Borax:PVA ratio in hydrogels
62.0	0.6	3	1:100
62.0	12.4	3	1:5
106.0	1.1	5	1:100
106.0	21.2	5	1:5
128.0	2.1	6	1:60
128.0	3.2	6	1:40
128.0	5.1	6	1:25
128.0	8.5	6	1:15
129.0	25.8	6	1:5
198.0	2.5	9	1:80
198.0	3.3	9	1:60
198.0	5.0	9	1:40
199.0	8.0	9	1:25
202.0	40.4	9	1:5
274.0	2.7	12	1:100
274.0	3.4	12	1:80
274.0	4.6	12	1:60
274.0	6.9	12	1:40
274.0	11.0	12	1:25
280.0	56.0	12	1:5
355.0	3.6	15	1:100
355.0	4.4	15	1:80
355.0	5.9	15	1:60
355.0	8.9	15	1:40
355.0	14.2	15	1:25
366.0	73.2	15	1:5

Table S2 The gelation time with different PVA contents and borax:PVA ratios

PVA content (wt%)	Borax:PVA ratio	Gelation time (second)
3	1:100~1:5	—
4.5	1:100~1:5	—
6	1:100~1:60	—
6	1:40	31
6	1:25	26
6	1:15	29
6	1:5	99
9	1:100~1:80	—
9	1:60	22
9	1:40	26
9	1:25	36
9	1:5	100
12	1:100	—
12	1:80	27
12	1:60	29
12	1:40	34
12	1:25	40
12	1:5	100
15	1:100	27
15	1:80	28
15	1:60	30
15	1:40	35
15	1:25	41
15	1:5	119

—: hydrogel was not formed after 12h.

Table S3 The stress-strain data of the PVA-borax hydrogels

PVA content (wt%)	Borax:PVA ratio	Maximum stress (kPa)
6	1:5	80.50
6	1:15	21.33
6	1:25	7.33
6	1:40	0.67
9	1:25	10.00
12	1:25	13.27
15	1:25	36.59

Table S4 The stress-strain data of the PVA-SA-borax hydrogels

PVA content (wt%)	SA content (wt%)	Borax:PVA ratio	Maximum stress (kPa)
15	0.0	1:25	36.59
15	0.6	1:25	69.25