Electronic Supplementary Material (ESI) for RSC Advances.

Supporting Information

Dynamic Chitosan-Based Self-Healing Hydrogels with Tunable Morphology and Its application as an Isolating Agent

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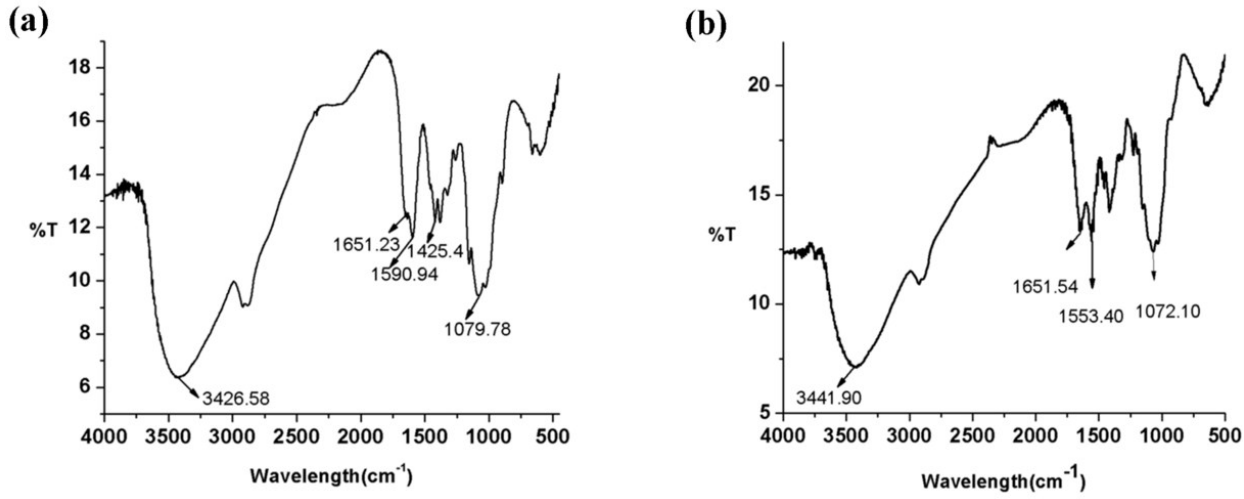

Figure S1: FT–IR spectra of (a) chitosan and (b) ChF.

Table S1: The most significant peak of FT-IR

Sample	$\nu_{C=O}$ (amide I)	δ_{N-H} (amide II)	$\nu_{C=N}$ (imine)	$\nu_{(bridge\ C-O-C)}$
Chitosan	1651.54	1553.40	absent	1072.10
ChG	absent	absent	1636.3	1073.3

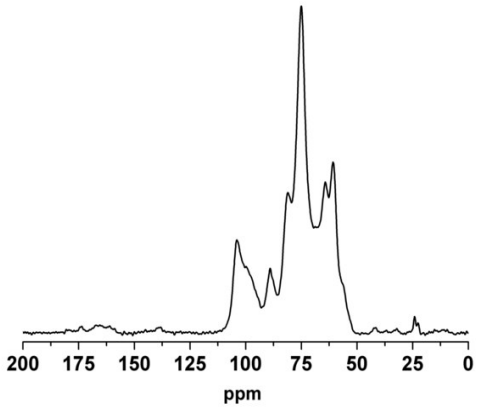

Figure S2: ^{13}C CP-MAS NMR spectrum ChF.

Table S2: Chemical shifts of ChF by ^{13}C CP-MAS NMR

C_1	$C_{1'}$	C_2	C_3	C_4	C_5	C_6	C_7	C_8	C_9
104.21	99.68	81.05	75.29	64.12	74.57	60.82	161.19	173.93	24.49

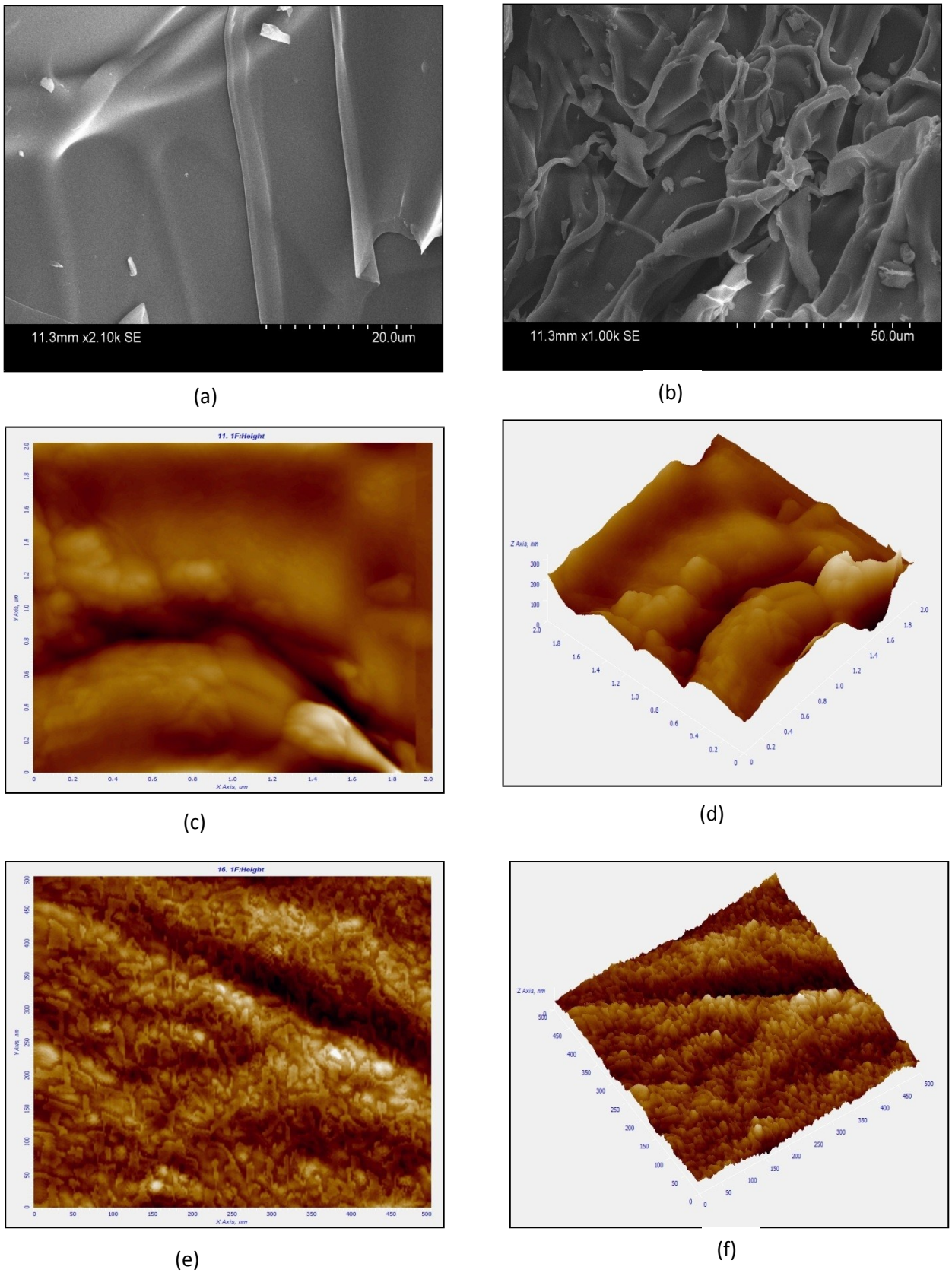

Figure S3: (a) and (b) are SEM images of ChF1 and ChF5 respectively, (c), (d), (e) and (f) AFM images of ChF1.

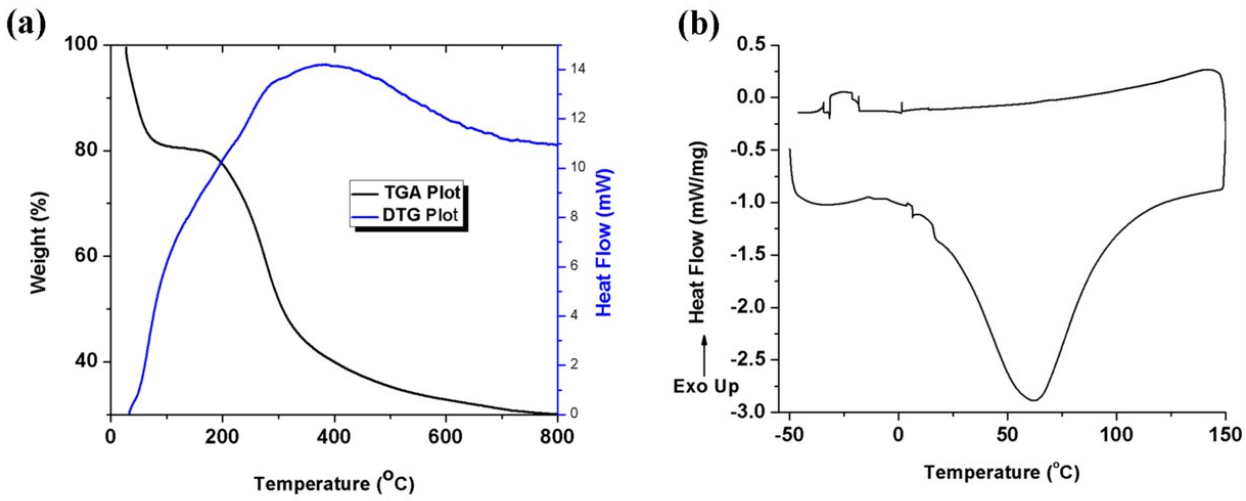

Figure S4: (a) Thermogravimetric analysis (b) Differential Scanning Calorimetry of ChF.

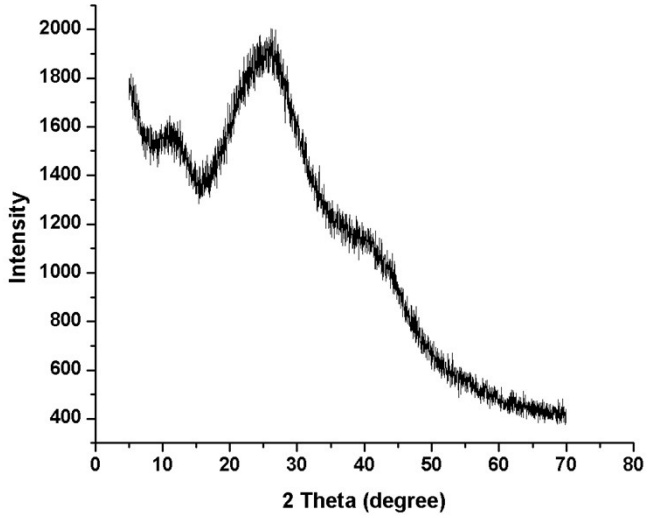

Figure S5: Powder XRD patterns of ChF.

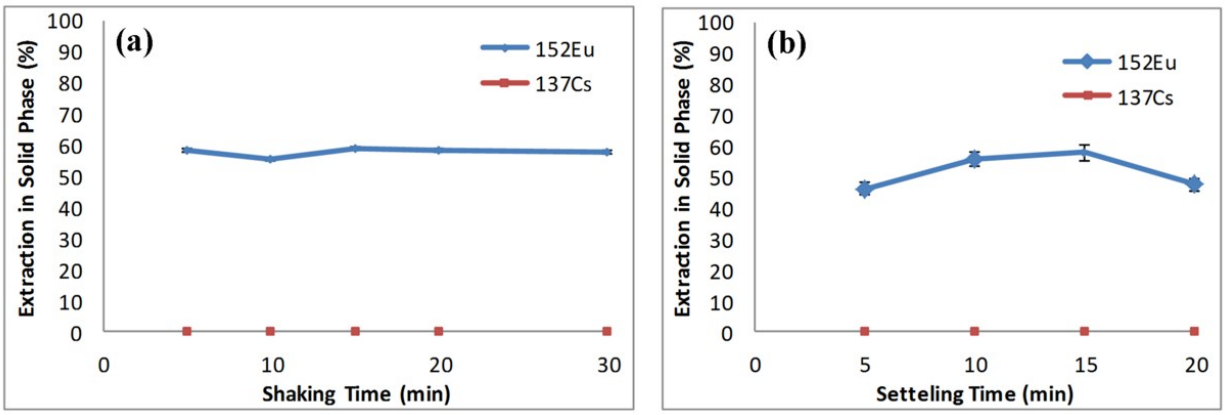

Figure S6: SLX profile of ^{152}Eu and ^{137}Cs in solid phase (hydrogel) by varying (a) shaking time and (b) settling of the medium.

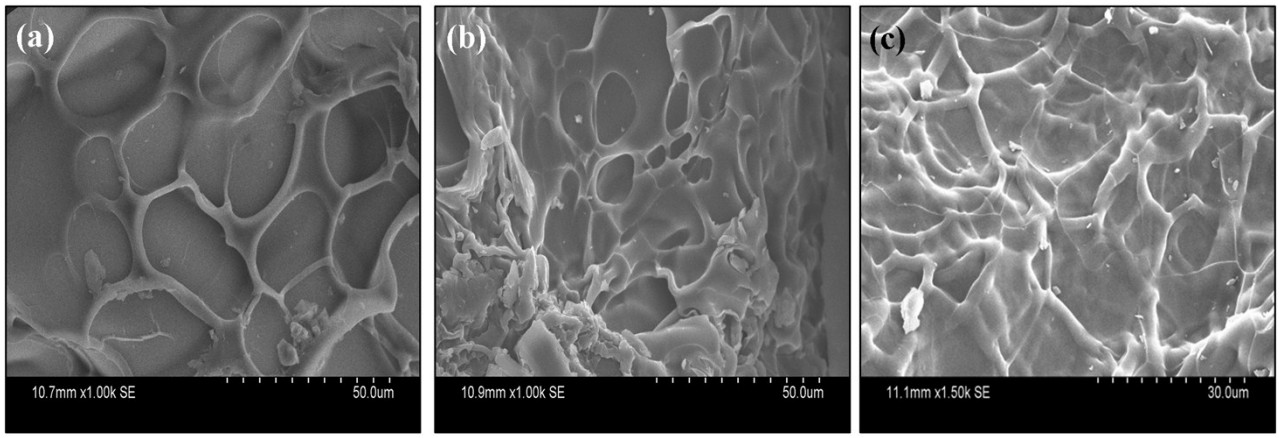

Figure S7: Morphological Study of ChF after heating at (a) 60 ºC, (b) 75 ºC and (c) 90 ºC.

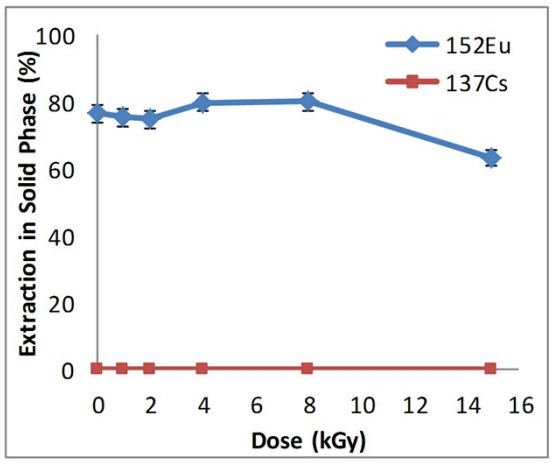

Figure S8: Effect of γ-irradiate ChF on the SLX profile of ^{152}Eu and ^{137}Cs in solid phase (ChF) at pH 5.

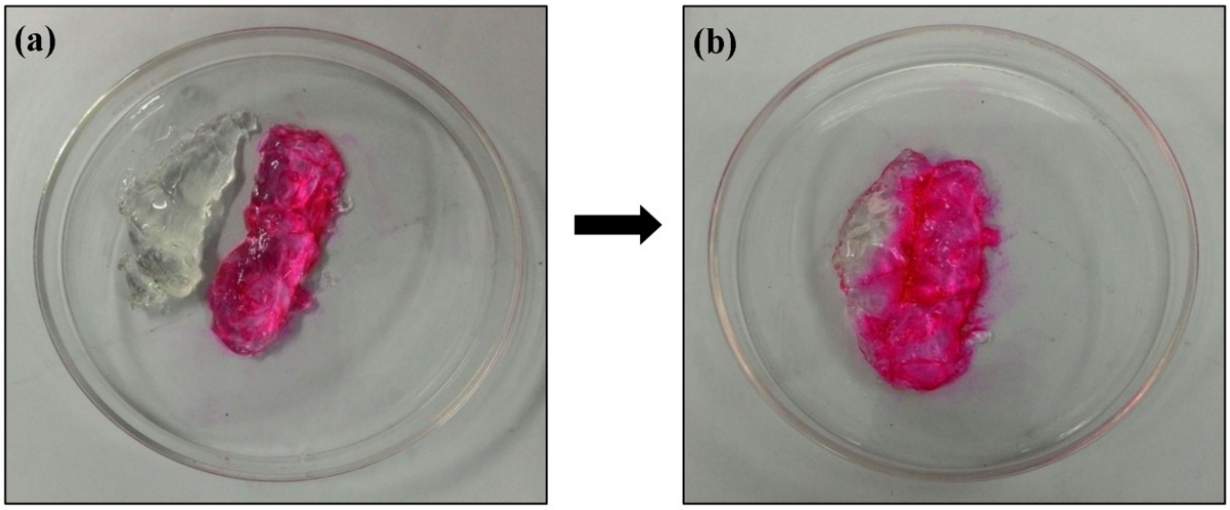

Figure S9: Appearance of self-healing of ChF hydrogel automatically without any additional stimuli.