

Electronic Supplementary Information

A mechanically tough and ultra-swellable microneedle for acute gouty arthritis

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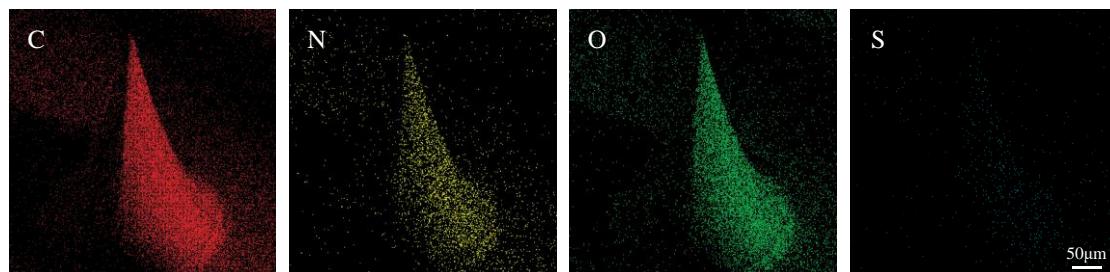


Fig. S1 The element mappings of the HMNs.

Table S1 HMNs samples of different contents.

Sample	AM (wt%)	BACA (wt‰)	Irgacure 2959 (wt‰)
H1	8.33	1.67	1.67
H2	16.67	1.67	1.67
H3	33.33	1.67	1.67
H4	16.67	1.67	8.33
H5	16.67	3.33	8.33
H6	16.67	6.67	8.33
H7	16.67	3.33	1.67
H8	16.67	3.33	8.33
H9	16.67	3.33	16.67

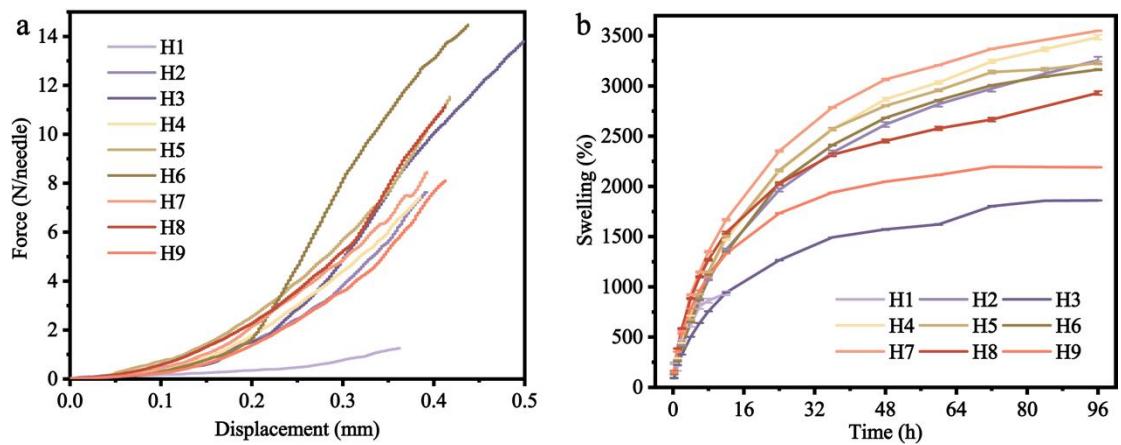


Fig. S2 Mechanic (a) and swelling (b) behavior of the HMNs with different ratios.

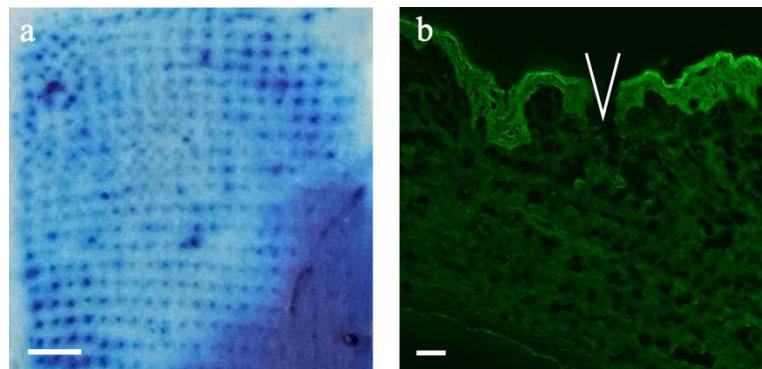


Fig. S3 ***In vitro*** insertion capability of microneedles. (a) Photograph of methyl blue stained section of rat skin after the HMN applied; scale bar: 2 mm. (b) Confocal microscopy images of calcein-HMNs inserted into pig skin; scale bar: 50 μ m.

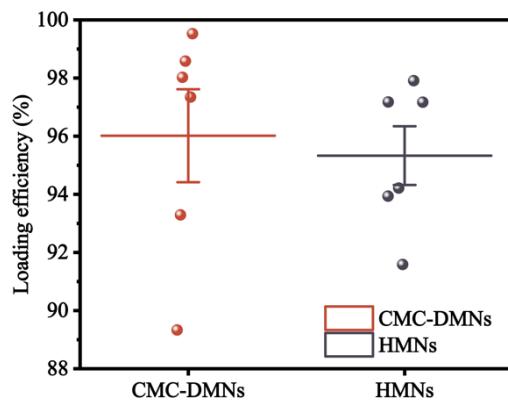


Fig. S4 Loading efficiency of Col (1.0 mg) in each HMNs and CMC-DMNs.

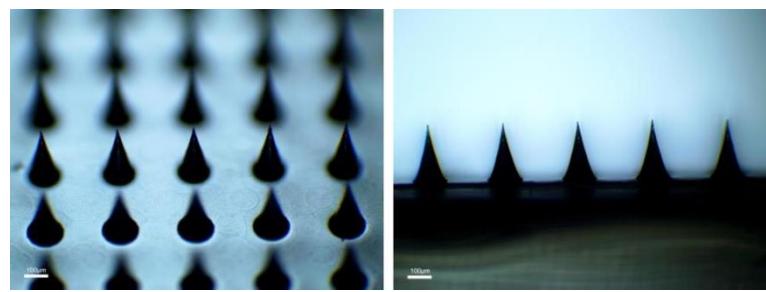


Fig. S5 Microscopic images of Col-HMNPs. scale bar: 100 μ m.

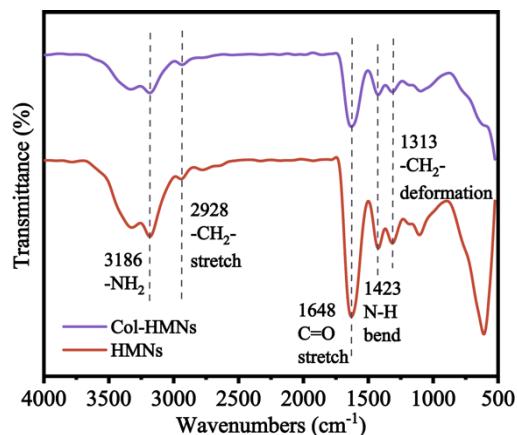


Fig. S6 FTIR spectra of HMN and Col-HMNPs.

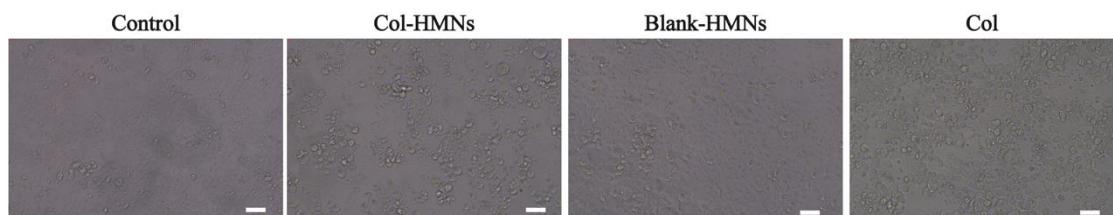


Fig. S7 Microscopic images of different groups of cells in cytotoxicity experiments; scale bar: 200 μ m.



Fig. S8 Feet images of rats treated with Col-HMNPs and i.g. Col.