

Supplementary

Bio-inspired lubricant drug delivery particle for treatment of osteoarthritis

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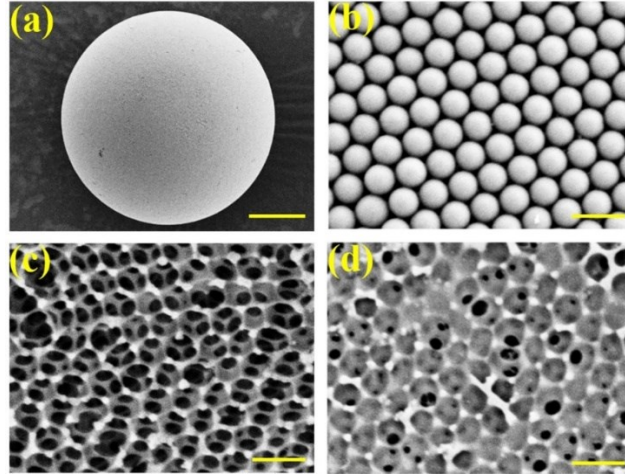
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Author contributions

Y.J.Z. conceived the conceptualization and designed the experiment; L.Y. carried
out the experiments; L.Y., Y.X.L. and X.S. analyzed data and wrote the paper; D.N.
and T.T.K contributed to scientific discussion of the article.

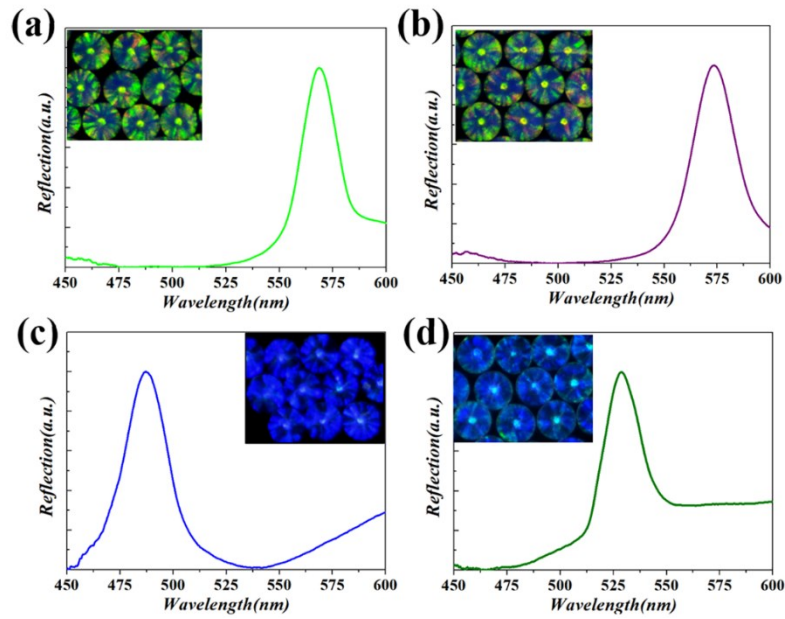


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2 **Fig. S1.** SEM images: (a) The whole view of SCCBs; (b) The surface of SCCBs; (c)
 3 The surface of pNIPAM inverse opal particles; (d) The surface of inverse opal particles
 4 with HA. The scale bars are 50 μm in (a) and 500 nm in (b-d).

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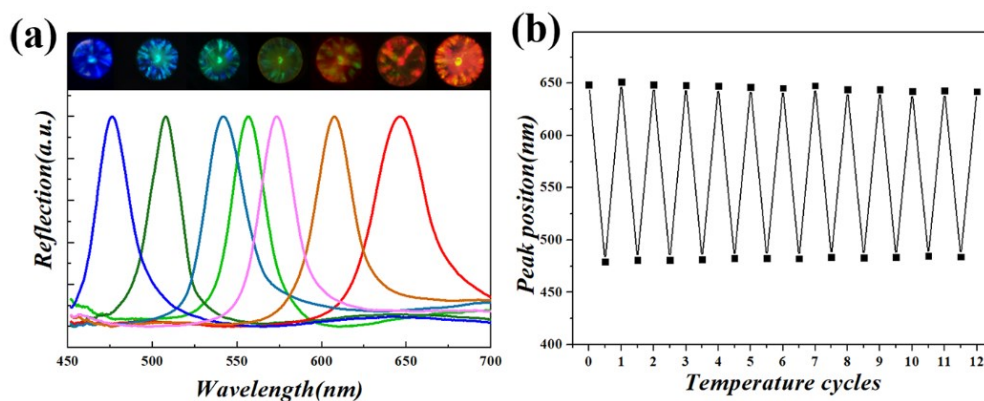


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8 **Fig.S2.** (a-d) The reflection spectra of (a) template SCCBs, (b) pNIPAM hybrid
 9 SCCBs, (c) inverse opal particles, and (d) inverse opal particles with HA&DS.

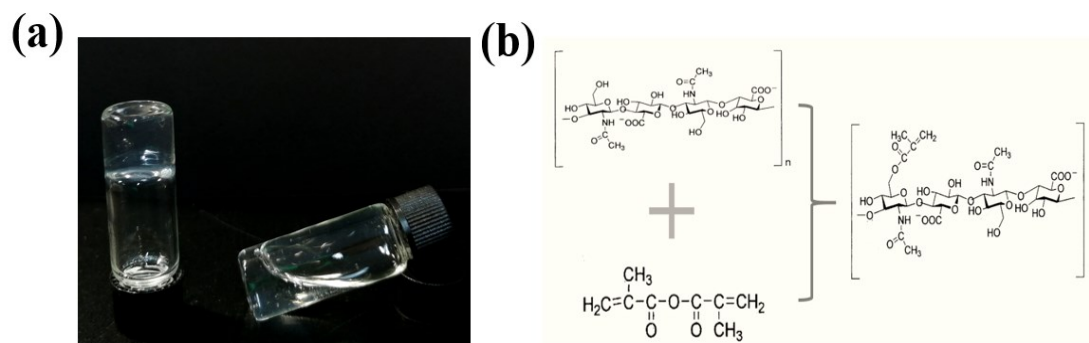
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2 **Fig. S3.** (a-b) The images of reflection peaks (a) and the peak position of the particles
3 during temperature changes (b).

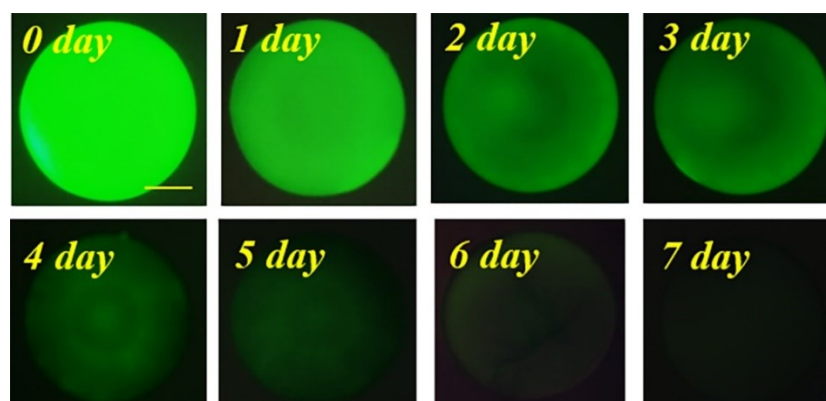
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6 **Fig. S4.** (a) The HA before (right) and after (left) UV irradiation; (b) Synthesis process
7 of modified HA by methacrylic anhydride.

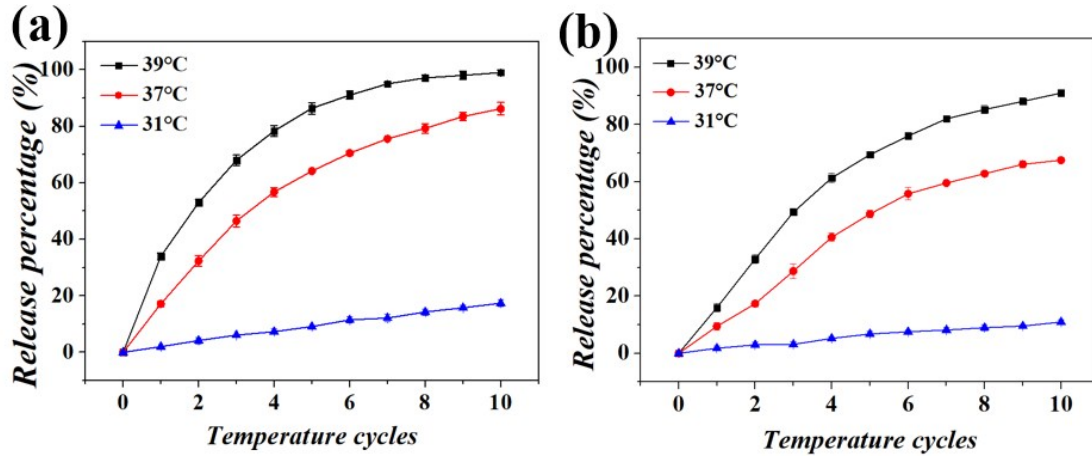
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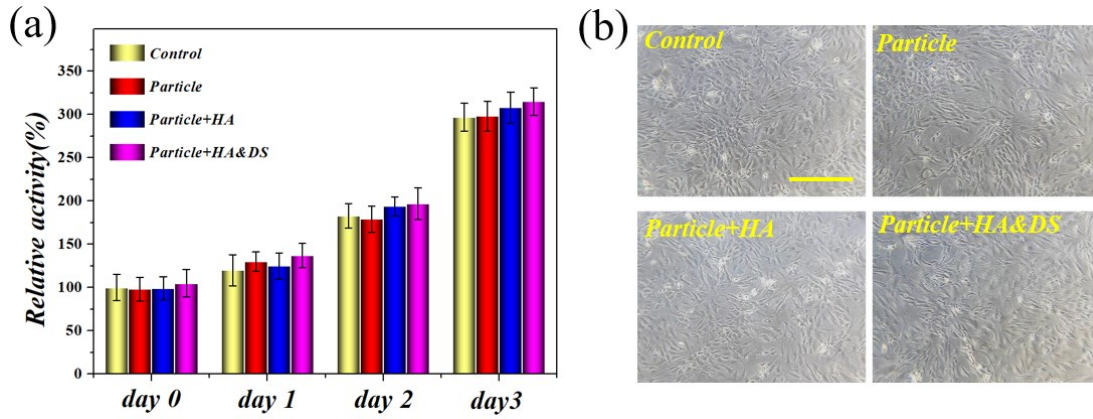
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10 **Fig. S5.** The fluorescent images of FITC particles after 0-7 days drug releasing. The
11 scale bars are 50 μ m.

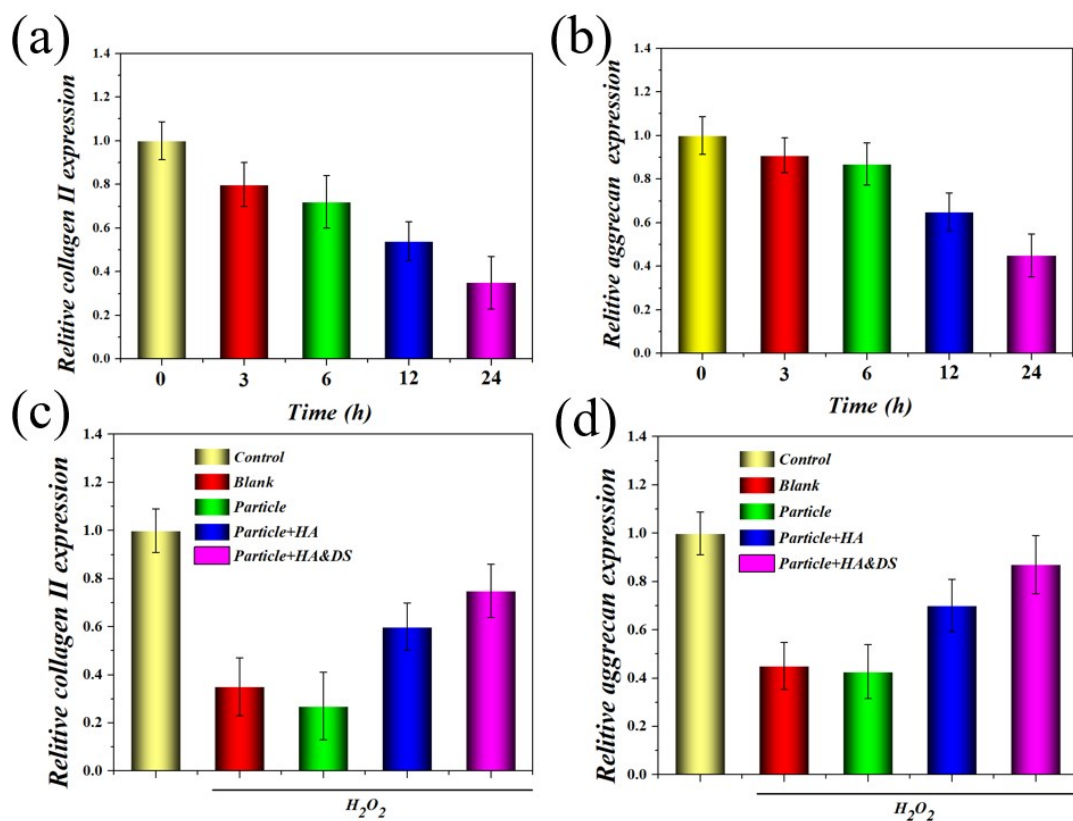
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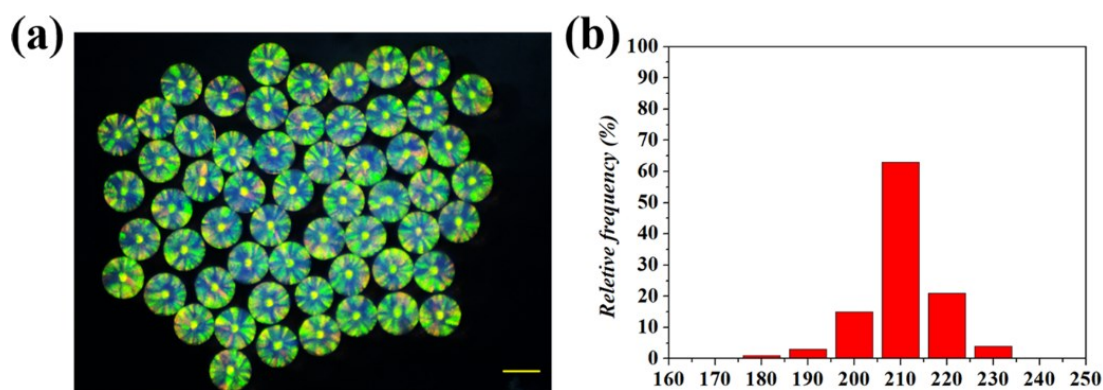
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3 **Fig. S6.** (a-b) The different HA particles loaded with DS under different stimulating
4 temperature cycle: (a) 1% HA particles loaded with DS in the temperature cycle; (b)
5 4% HA particles loaded with DS in the temperature cycle.



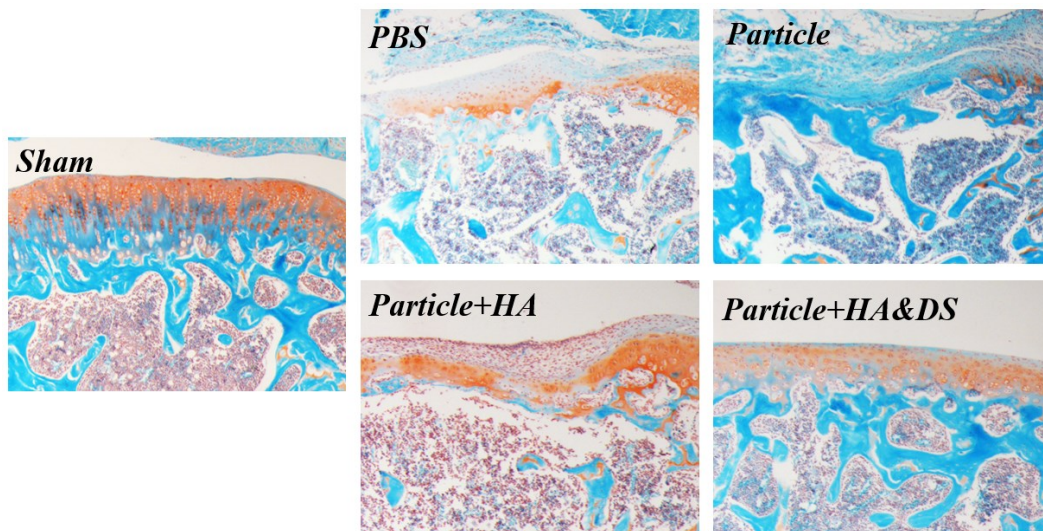
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9 **Fig. S7.** (a) The results of MTT assay on day 0, day 1, day 2 and day 3; (b) The
10 microscope images of the human primary chondrocytes on day 3. The scale bar is 100
11 μm .



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2 **Fig. S8.** (a-b) The relative mRNA expression of (a) collagen II and (b) aggrecan in
3 chondrocytes after treated with 200 μM H_2O_2 for different times; (c-d) The relative
4 mRNA expression of (c) collagen II and (d) aggrecan in chondrocytes after treated with
5 200 μM H_2O_2 and particles for 24 h.



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9 **Fig. S9.** (a-b) The morphology (a) and statistical size distribution histogram (b) of the
10 SCCBs. The scale bar is 200 μm .



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2 **Fig. S10.** The more areas of tibia plateau in different groups.

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5 **Table. S1.** Primer sequences used for RT-qPCR.

Gene	Forward (5'-3')	Reverse (5'-3')	Tm(°C)
<i>Aggrecan</i>	ATGCCCAAGACTACCAGTGG	ATGCCCAAGACTACCAGTGG	60
<i>Collagen II</i>	CCAGTTGGGAGTAATGCAAGG	ACACCAGGTTCCACCAGGTTCA	60
<i>β-actin</i>	GTTTGAGACCTTCAACACCCCC	GTGGCCATCTCTCTTGCTCGAA	60

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