

## **Surface modified porous silicon with chitosan coating as pH-responsive controlled delivery system for lutein**

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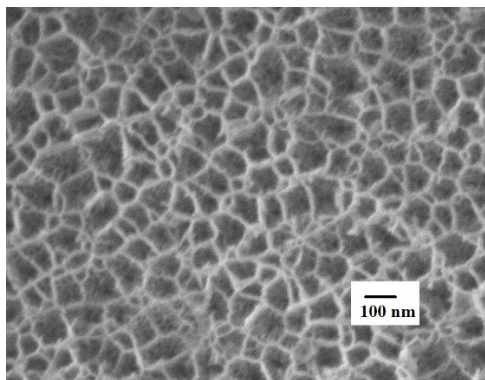
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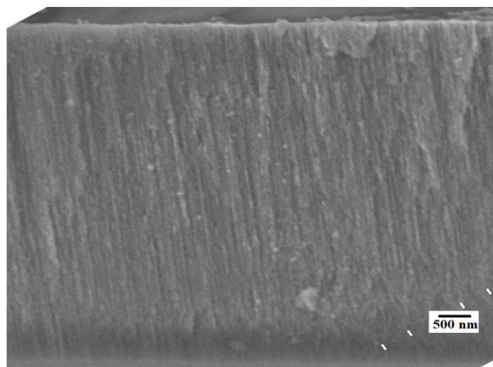
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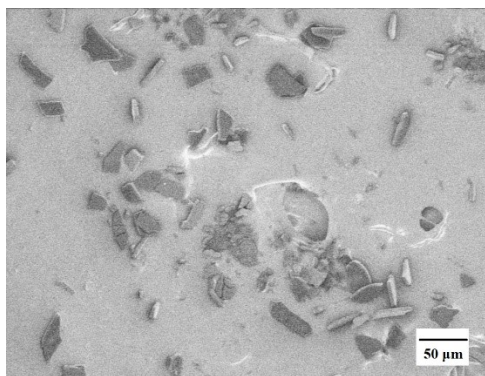
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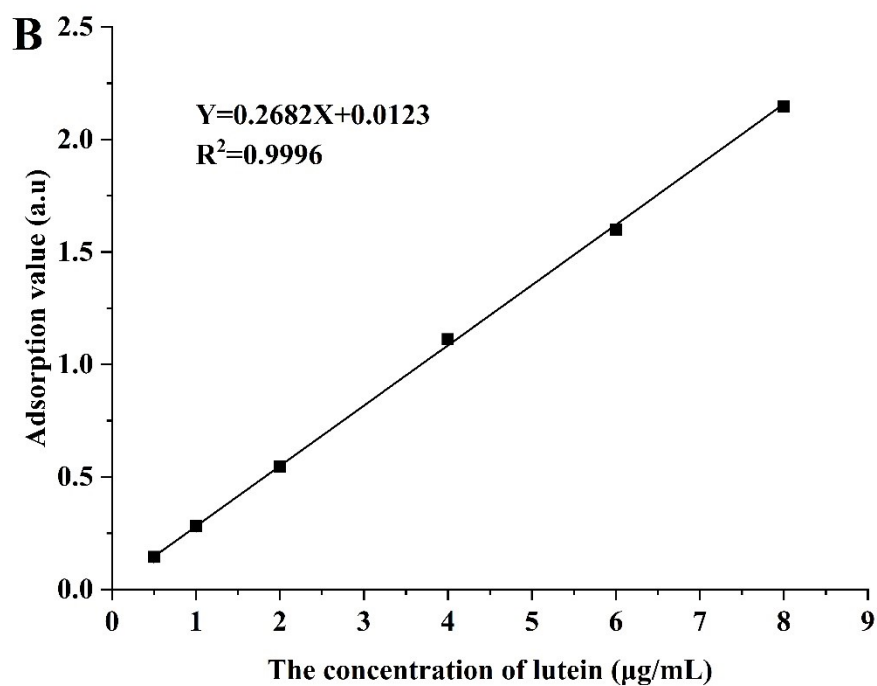
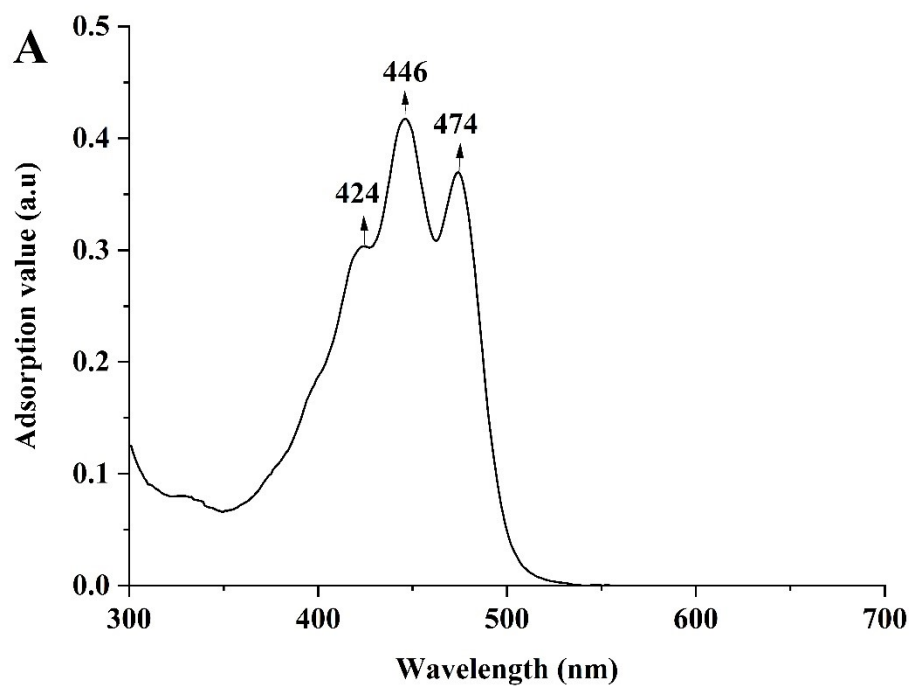
B



C



**Figure S1.** SEM images of PSi film: (A) top-surface; (B) cross-section; (C) PSi microparticles.



**Figure S2.** (A)The UV-visible absorption spectrum of lutein; (B) The standard curve of lutein detected by UV spectrophotometer.

**Table S1.** Results of recovery rate (n=3).

Added lutein ( $\mu\text{g}$ )	Detection ( $\mu\text{g}$ )	Recovery rate (%)	( $\bar{x}\pm\text{SD}$ )%	RSD%
100	109.38	109.38	108.25 $\pm$ 1.20	1.11
	108.78	108.78		
	106.59	106.59		
300	324.79	108.26	106.32 $\pm$ 1.41	1.32
	317.16	105.72		
	314.93	104.98		
500	484.91	96.98	97.07 $\pm$ 1.17	1.21
	492.73	98.55		
	478.41	95.68		

**Table S2.** Relationship between average cumulative release rates of lutein from CS-PSi and the dissolution time.

pH										
5.0	The dissolution time (h)	0	0.5	1	2	3	4	5	6	7
	Average cumulative release (%)	0	46.18	61.36	78.77	88.17	93.29	96.65	97.41	96.49
	Equation	Y=62.488 (t <sup>0.258</sup> )					R <sup>2</sup> =0.980			
7.4	The dissolution time (h)	0	0.5	1	2	3	4	5	6	7
	Average cumulative release (%)	0	36.71	52.35	70.20	81.99	85.62	86.69	86.10	84.25
	Equation	Y=54.315 (t <sup>0.276</sup> )					R <sup>2</sup> =0.955			
8.5	The dissolution time (h)	0	0.5	1	2	3	4	5	6	7
	Average cumulative release (%)	0	26.56	36.74	51.00	62.17	69.66	73.54	76.48	79.10
	Equation	Y=38.392 (t <sup>0.393</sup> )					R <sup>2</sup> =0.991			