

Support information

Boron Carbide Nanoparticles for Boron Neutron Capture Therapy

Shiwei XU¹, Ying YU¹, Boyu ZHANG¹, Kejia ZHU³, Yuan CHENG³, Tao ZHANG^{1,2,3,4,*}

1. College of Engineering and Applied Sciences, Nanjing University, Nanjing 210023, China

2. MOE Key Laboratory of High-Performance Polymer Materials and Technology, Nanjing University, Nanjing 210023, China

3. Wuxi Xishan NJU Institute of Applied Biotechnology, Wuxi 214104, China

4. School of Engineering, Qinghai Institute of Technology, Xining 810016, China

Figure S1. presented the effect of pH and temperature on stability of B₄C-APTES-PEG2K-FA NPs. Figure S2. presented the cellular uptake of nanoparticles images captured through confocal laser scanning microscopy. (cultured at 4°C for 24 hours).

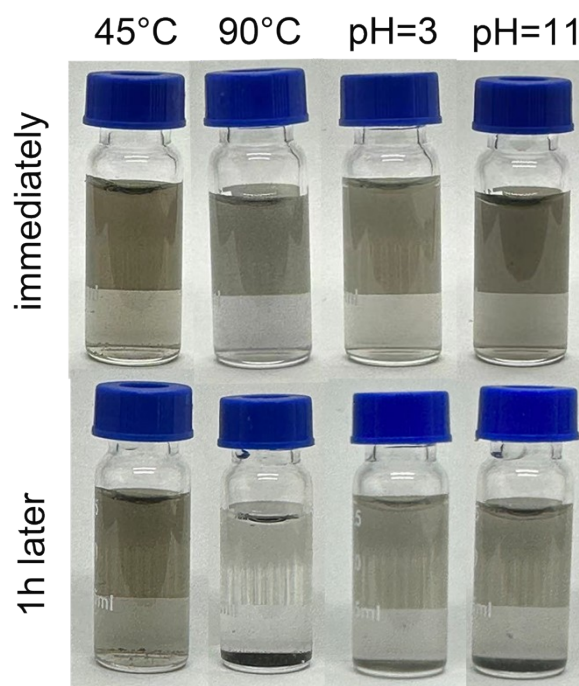


Figure S1. The effect of pH and temperature on stability of B₄C-APTES-PEG2K-FA NPs

* To whom correspondence should be addressed.

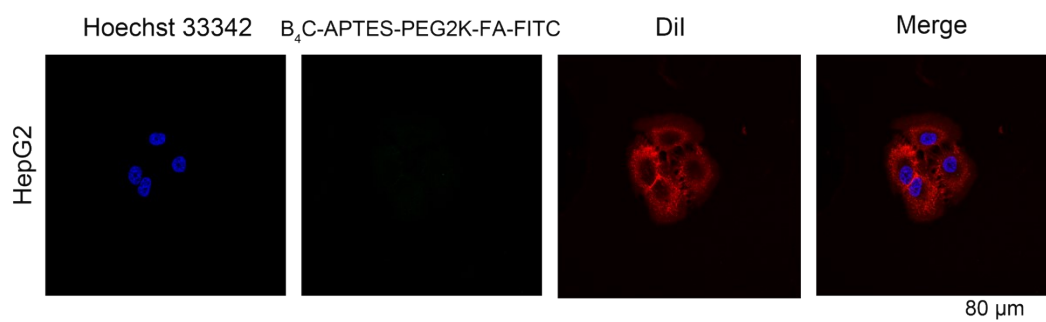


Figure S2. The cellular uptake of nanoparticles images captured through confocal laser scanning microscopy. (cultured at 4°C for 24 hours)

Table S1 and Table S2 presented the results of routine blood test and blood biochemical tests for mouse respectively. Table S3 presented the results of biological distribution of nanoparticles in NCG mice (%ID/g).

Table S1. Results of routine blood test for mouse

Items	Unit	Results	
		Control group	After I.V. for 24 h
Leukocyte	$10^9/L$	1.13 ± 0.54	0.76 ± 0.18
Neutrophil	$10^9/L$	0.22 ± 0.10	0.14 ± 0.06
Lymphocyte	$10^9/L$	0.58 ± 0.27	0.39 ± 0.06
Monocyte	$10^9/L$	0.24 ± 0.10	0.18 ± 0.06
Eosinophil	$10^9/L$	0.08 ± 0.06	0.05 ± 0.01
Basophil	$10^9/L$	0.01 ± 0.01	0.00 ± 0.00
Neutrophil percentage	%	19.37 ± 0.81	17.73 ± 2.71
Lymphocyte percentage	%	50.80 ± 0.66	51.70 ± 3.47
Monocyte percentage	%	22.07 ± 2.99	22.87 ± 2.67
Eosinophil percentage	%	6.83 ± 1.96	7.10 ± 2.26
Basophil percentage	%	0.93 ± 0.32	0.60 ± 0.44
Erythrocyte	$10^{12}/L$	6.82 ± 0.38	6.96 ± 0.88
Hemoglobin	g/L	116.00 ± 3.61	119.00 ± 13.53
Mean erythrocyte volume	fL	56.40 ± 1.90	55.70 ± 2.26
Platelet	$10^9/L$	565.67 ± 294.05	562.00 ± 30.51
Mean platelet volume	fL	6.60 ± 0.75	7.00 ± 0.30

Table S2. Results of mouse blood biochemical tests

Items	Unit	Results		
		Control group	After I.V. for 24 h	After I.V. for 168 h
Alanine aminotransferase (ALT)	U/L	45.96±11.78	39.41±8.47	42.49±11.98
Aspartate aminotransferase (AST)	U/L	191.35±37.40	204.55±25.85	191.8±24.96
Albumin (ALB)	g/L	37.15±2.43	39.25±3.07	36.05±2.12
Blood Urea Nitrogen (BUN)	mg/dL	26.83±3.93	30.28±3.51	27.62±1.87
Creatinine (CREA)	μmol/L	31.81±14.69	42.8±28.14	15.3±9.14
Uric acid (UA)	μmol/L	78.85±38.04	120.26±43.28	38.75±18.05

Table S3. Biological distribution of nanoparticles in NCG mice (%ID/g)

Organ or Tissue	6 h	24 h	48 h	72 h
Heart	1.11±0.32	1.84±0.58	0.82±0.10	1.07±0.33
Liver	11.09±3.68	21.24±3.02	22.30±1.88	23.11±4.44
Spleen	1.72±0.65	12.86±4.56	14.18±1.40	16.64±2.70
Lung	374.82±22.04	285.19±43.49	256.39±17.87	211.39±29.76
Kidney	1.79±0.18	1.58±0.55	1.06±0.23	1.04±0.44
Brain	0.34±0.21	0.43±0.06	0.25±0.11	0.46±0.28
Tumor	0.56±0.08	1.66±0.34	0.90±0.22	0.97± 0.06
Muscle	0.22±0.11	0.28±0.13	0.28±0.08	0.29±0.05