Multifunctional iron oxide/silk-fibroin (Fe$_3$O$_4$-SF) composite microspheres for the delivery of cancer therapeutics

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Fig.S1 TGA image of Fe$_3$O$_4$-SF composite microspheres at 800°C under the air atmosphere (5.313mg).

In order to calculate iron oxide particles content, TGA test was studied under the air atmosphere. From fig.S1, the silk was completely lost at ~630°C and the residuum was Fe$_2$O$_3$. According to the chemical equation, we can calculate that the quality percentage of Fe$_3$O$_4$ is ~9.2%.

$$4Fe_3O_4 + O_2 = 6Fe_2O_3$$

In the process of preparation, 0.5wt% SF solution and 0.5wt% Fe$_3$O$_4$ solution were mixed in a volume ratio of 40:1. The Fe$_3$O$_4$ content should be 2.5% theoretically. However, not all the silks were precipitated in the salting out process and part of them were lost. Then the Fe$_3$O$_4$ content was increased and the quality percentage of Fe$_3$O$_4$ is ~9.2%.