Supporting Information

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Microspheres Assembled from Chitosan-*Graft*-Poly(lactic acid) Micelle-Like Core–Shell Nanospheres for Distinctly Controlled Release of Hydrophobic and Hydrophilic Biomolecules

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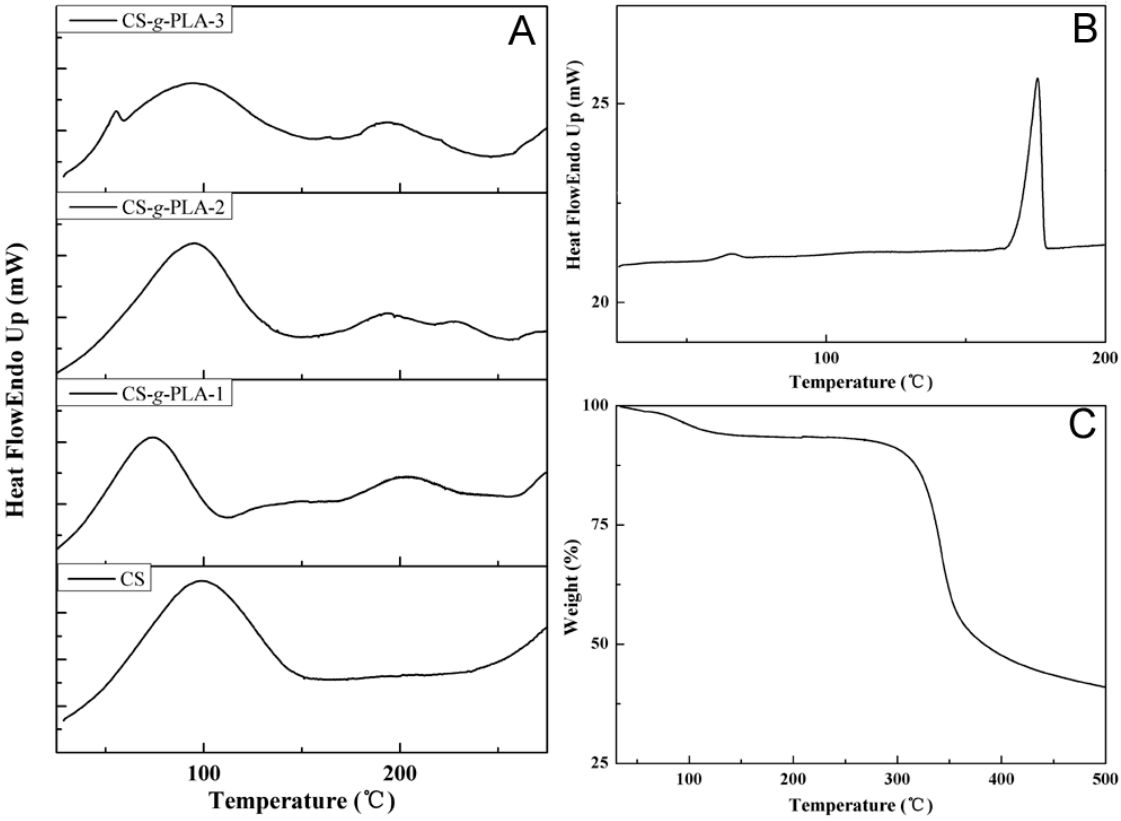

Figure S1. Thermal properties of CS-*g*-PLA copolymers. A) DSC thermograms of various CS-*g*-PLA copolymers and the control CS. B) DSC thermogram of the control high molecular weight PLA. C) TGA thermogram of the control CS. These results demonstrate that the 3 synthesized CS-*g*-PLA copolymers had the similar thermostability to that of CS.

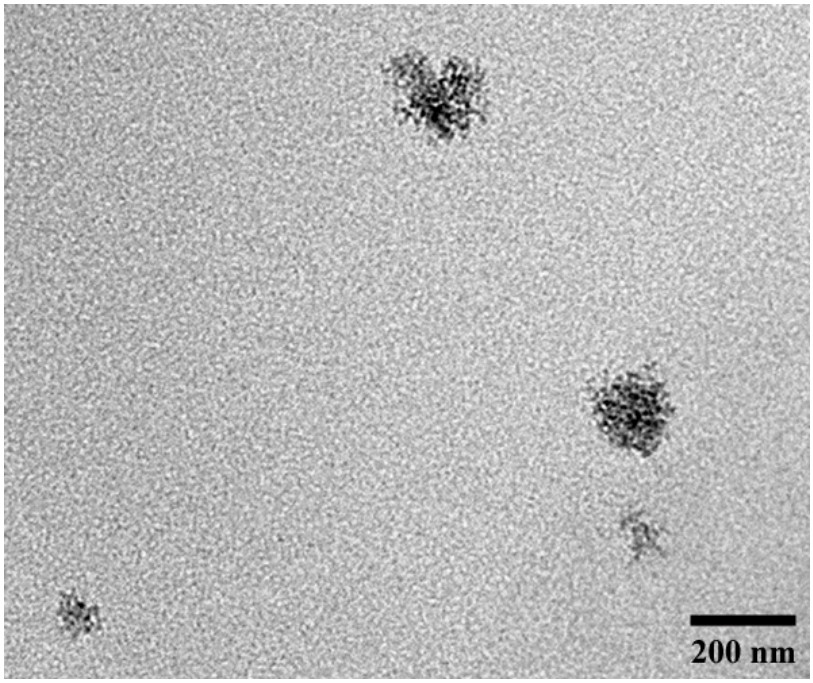

Figure S2. TEM micrograph of CS-*g*-PLA-1 self-assembled structure stained with PTA. The result showed that when LA/CS weight ratio was 10:1, the synthesized CS-*g*-PLA-1 failed to self-assemble into micelle-like core-shell structure.

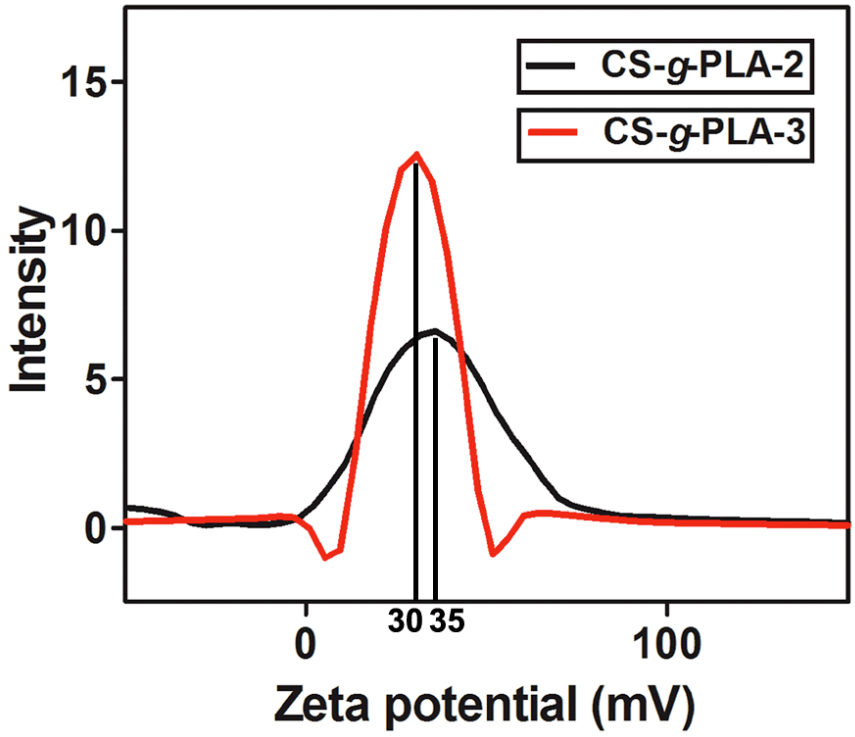

Figure S3. Zeta potentials of CS-*g*-PLA copolymeric micelles. The positive zeta potentials of both CS-*g*-PLA-2 and CS-*g*-PLA-3 indicate that PLA and CS were mostly distributed in the cores and shells, respectively. When LA/CS weight ratios was increased from 20:1 in CS-*g*-PLA-2 group to 40:1 in CS-*g*-PLA-3 group, the corresponding zeta potentials decreased from 35.3 to 30.0 mV.

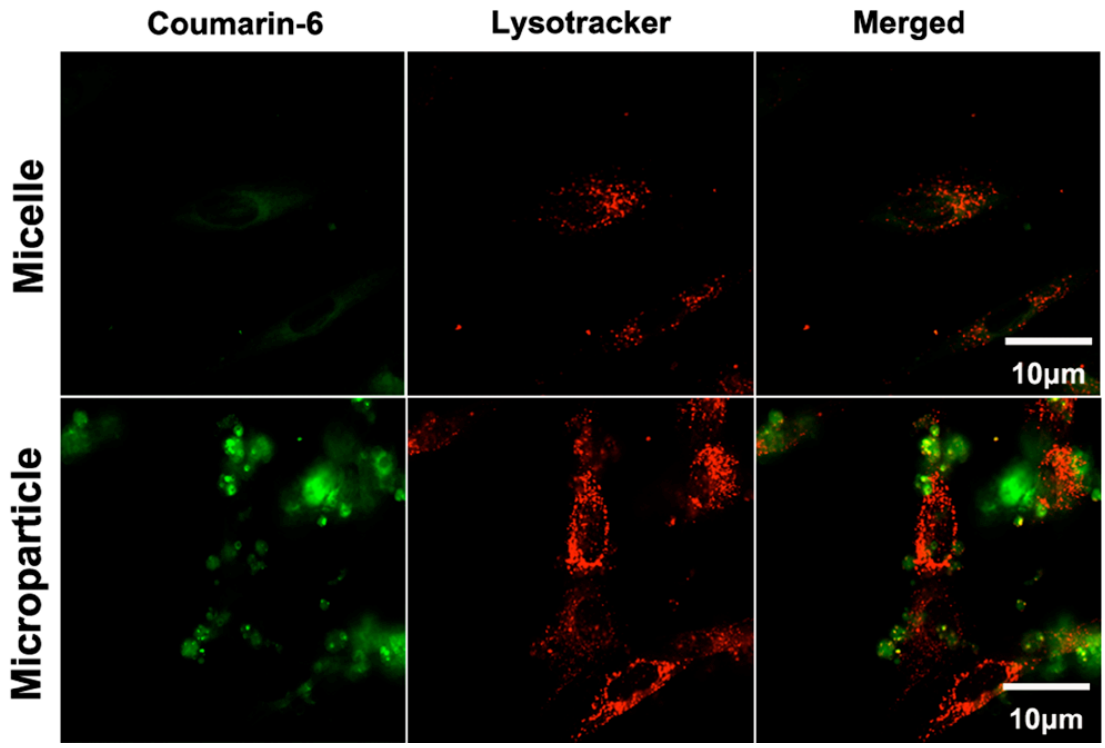

Figure S4. Phagocytosis of CS-*g*-PLA-2 copolymeric micelles and microspheres. Both micelles and microspheres were loaded with fluorochrome coumarin-6 (green fluorescence). After incubation for 1 day, the lysosomes of DPSCs were labeled with Lysotracker (red fluorescence) for 1 h before observation. LSCM images were captured with identical exposure settings. The micelles entered into cytoplasm of DPSCs and further aggregated within lysosomes, while the microspheres could not be phagocytized by DPSCs.

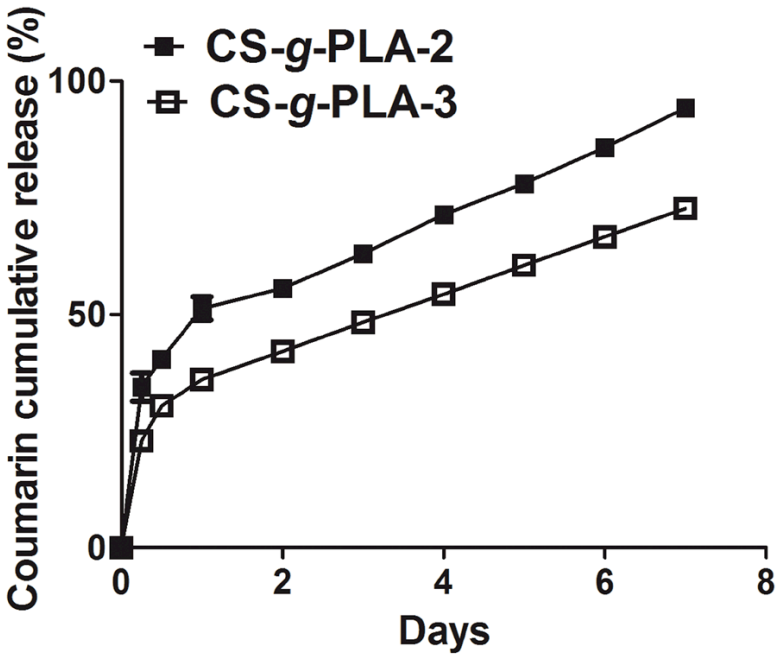

Figure S5. Release profiles of coumarin-6 from CS-*g*-PLA copolymeric micelles *in vitro* in PBS buffer. In both CS-*g*-PLA-2 and CS-*g*-PLA-3 groups, biphasic release patterns were observed during the first week with slight burst release in the first day and linear release in the following 6 days. When LA/CS weight ratios increased from 20:1 in CS-*g*-PLA-2 group to 40:1 in CS-*g*-PLA-3 group, coumarin-6 exhibited reduced release rate and decreased cumulative release.

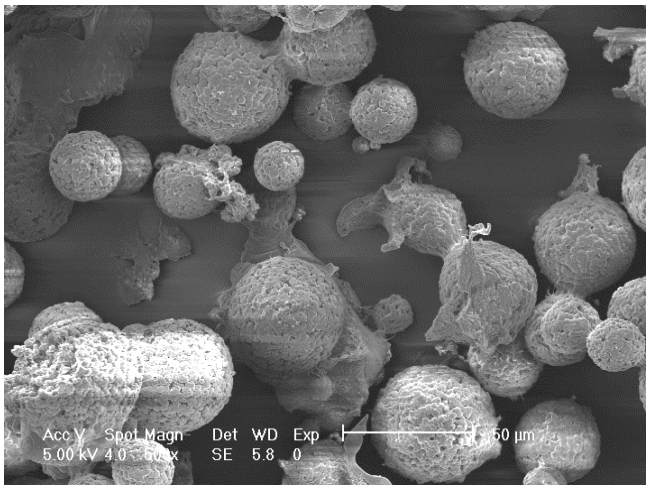

Figure S6. Morphology of CS-*g*-PLA-2 copolymeric microspheres loaded with FA and BMP-2 after immersion for 2 weeks in PBS. The microspheres had a small degree of deformation and conglutination, but most microspheres still kept their original spherical shape.