*Chemical Communications*

## <SUPPLEMENTARY MATERIALS>

# Construction of CdS Quantum Dots *via* Regioselective Dendritic Functionalized Cellulose Template

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## EXPERIMENTAL SECTION

**{[$(HO_2C)_{27}$-Den]-Cellulose} (2).** The dissolution (2.5 %) of cellulose in DMAc/LiCl was accomplished by a known procedure. To this solution containing 100 mg of cellulose [microcrystalline cellulose, degree-of-polymerization (DP) = 280], the 3rd-generation isocyanate dendron[1,2] and dibutyltin dilaurate, as catalyst, were added; the ratio of isocyanate to cellulose anhydroglucose unit (AUG) was 3:1 and the catalyst concentration was 2 %, base on cellulose. The mixture was stirred and maintained at 65 °C for 4 days after which, the reaction mixture was added to a MeOH/$H_2O$ (70:30) solution to yield a precipitate that was next centrifuged, and washed (3×) with a MeOH/$H_2O$ mixture. The crude product was purified using a dialysis membrane (10,000 MWCO) to remove residual solvent as well as unreacted materials. The solution of modified cellulose **1** was then added to formic acid (10 mL) and stirred for 24 h at 25 °C. After the reaction, the excess formic acid was removed *in vacuo*.

**Biocompatibility Test.**[3] CdS/cellulose hybrid **3** coated coverslips were used for the test. Whole blood (9 mL) was drawn from healthy, medication-free human donors into a 10-mL tube containing 1 mL of 3.8 % sodium citrate anticoagulant, centrifuged at 800 rpm for 15 min to collect platelet-rich plasma (PRP). The platelet density was about $3.6 \times 10^5$ /μL as determined by Coulter $A^c$.T diff (Beckman Coulter, Schaumburg, IL). The test coverslips were put in a 24-well culture plate and hydrated by adding 500 μL of *phosphate buffered saline with calcium and magnesium* (PBS) for 15 min, and then incubated with 500 μL of diluted PRP with about $3.0 \times 10^4$ platelets/well for 1 h. The PRP suspension was removed, and the coverslips were gently washed with PBS. Adherent platelets were fixed by adding 500 μL of 1 % *paraformaldehyde* (PFA) in PBS and incubating at 25 °C for 1 h, followed by washing with PBS. The coverslips were then mounted face-up on a coverslide using Crystal Mount. The images were collected with a Spot RT chilled CCD camera and analyzed using Meta Morph software (Universal Imaging Corp.).

## RESULTS AND DISCUSSION

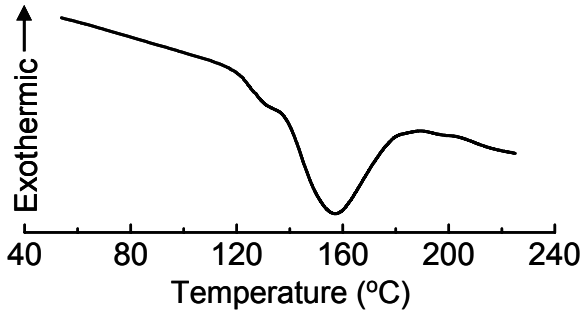


**Figure SI-1.** DSC thermogram of the {[$(HO_2C)_{27}$-Den]-cellulose} **2** at heating rate of 10 °C/min.

In principle, when platelets die, it is difficult to detect their presence on the microscope slide due to shrinkage. In this test, the platelets and platelet aggregates were observed, and CdS/Cellulose hybrids **3** were also appeared near by platelets, as white spots, on Figure SI-2.

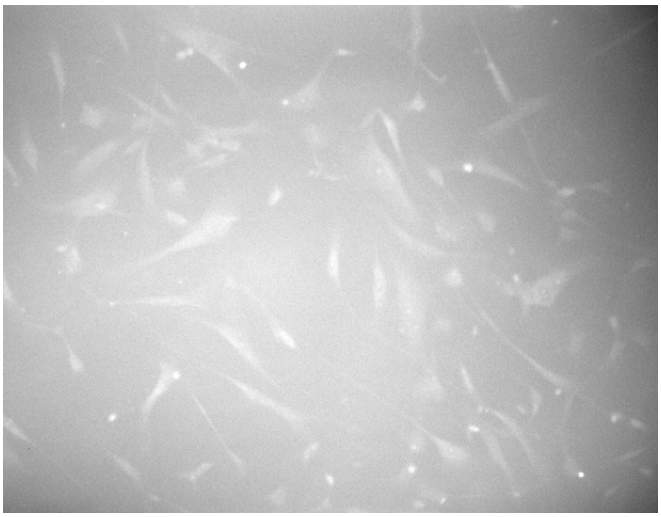

**Figure SI-2.** Photograph of biocompatibility test for platelet with CdS/Cellulose hybrid **3**.

## REFERENCES

1. Newkome, G. R.; Kotta, K. K.; Moorefield, C. N. *J. Org. Chem.* **2005**, *70*, 4893-4896.
2. Available from Frontier Scientific, Inc., Logan, UT (*www.frontiersci.com*).
3. Zhu, J.; Marchant, R. E. *Biomacromolecules* **2006**, *7*, 1036-1041.