Supplementary Material (ESI) for Journal of Materials Chemistry

Supplementary Information

Structural Design and Preparation of High-performance QD-encoded Polymer Beads for Suspension Arrays

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1.1 FTIR spectra of cross-linked PSEMBs

FTIR spectra were acquired on a FTS-6000 FTIR (Bio-Rad) spectrometer using KBr pellets in the range from 4000 to 400 cm^{-1}. Samples were dried overnight using a vacuum drying oven.

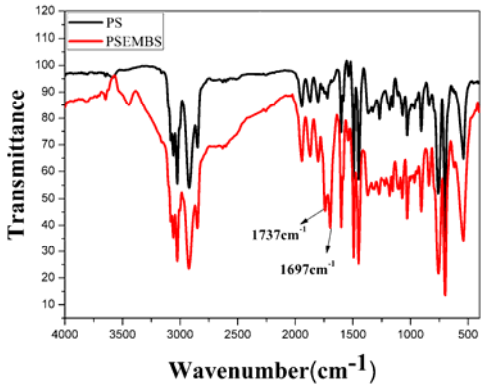

Fig.S1 The FTIR spectra of PS and Cross-linked PSEMBs

In comparison with the FTIR of PS, the characteristic signals of -c=o at 1697 cm^{-1} and 1737 cm^{-1} and the –OH at 2500-3500 cm^{-1} were observed in spectrum of PSEMBS.

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1.2 Swelling properties of the cross-linked PSEMBs

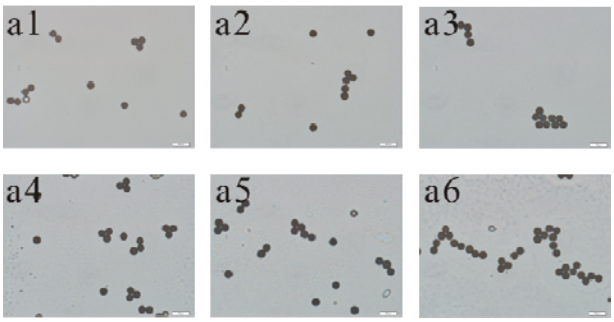

Fig.S2 cross-linked PSEMBs in solvent mixtures containing (a) 100 % isopropanol; (b) 5 % chloroform and 95 % isopropanol; (c) 20 % chloroform and 80 % isopropanol; (d) 40 % chloroform and 60 % isopropanol; (e) 60 % chloroform and 40 % isopropanol; (f) 100 % chloroform (vol/vol). The scale bar is 50 μm.

The swelling properties of the cross-linked PSEMBs in mixtures of isoproanol (a poor solvent for PS) and chloroform (a good solvent for PS) are shown in Fig. s2, as a function of increasing chloroform concentration, the extent of microspheres swelling is hardly changed.

1.3 TEM images and PL spectra of CdxZn1-xSeyS1-y QDs

TEM images were obtained on a transmission electron microscope (JEOL, JEM-100SX) operated with an accelerating voltage of 80~100 kV. Samples for TEM were prepared by placing a drop of the diluted sample on a 400-mesh carbon-coated copper grid.

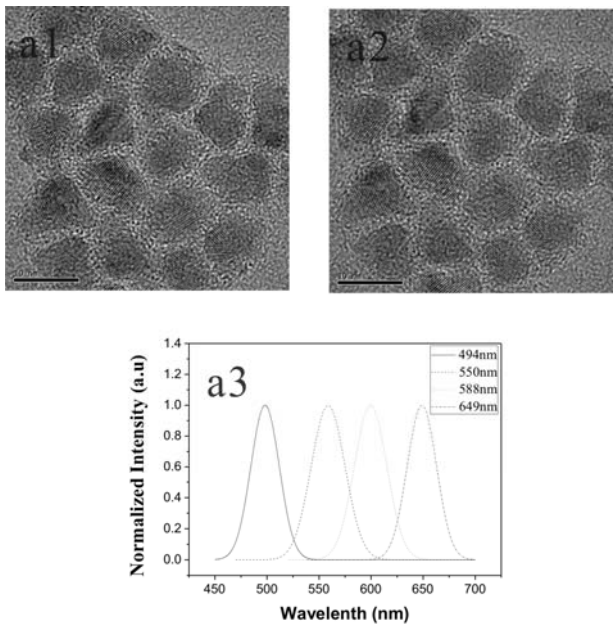

Fig.S3 TEM photographs of QDs (a1, a2) and PL spectra of $Cd_xZn_{1-x}Se_yS_{1-y}$ nanocrystals with emission wavelength of 494 nm, 550 nm, 588 nm and 649 nm (a3). The scale bar is 10 nm.

1.4 SEM images of macro-porous beads

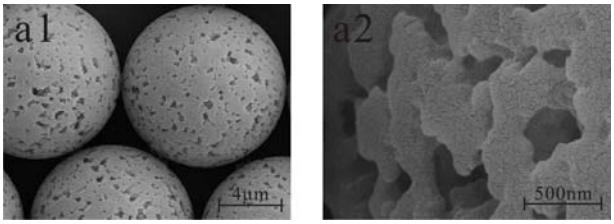

Fig.S4 SEM images of macro-porous beads from Baseline co. Ltd. (a1) ×30000, (a2) the portion magnitude pictures of a single bead, ×500000

Fig.S4 shows that the pore size of macro-porous beads from baseline co. Ltd is about 100-450 nm.