Supporting Information

Facile Preparation and Multifunctional Applications of Boron Nitride Quantum Dots

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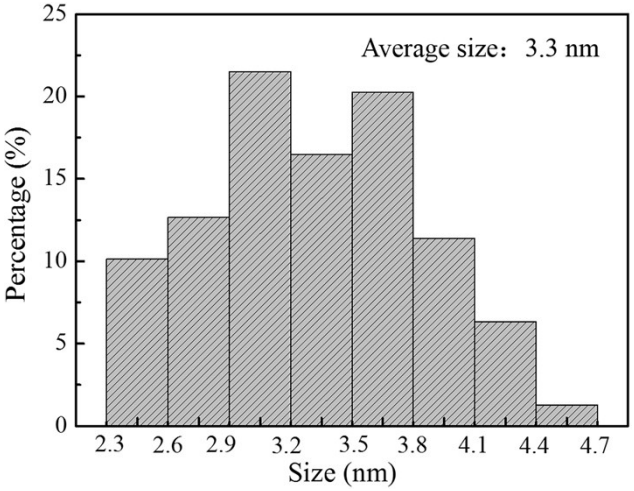

Fig. S1 The size distribution of the BN QDs.

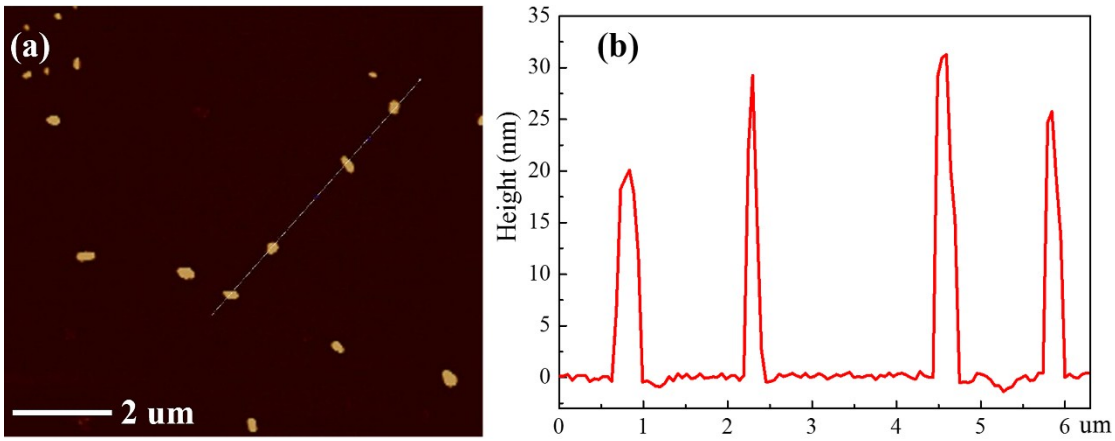

Fig. S2 AFM images of BN nanosheets prepared by the sonication treatment of bulk BN flakes in DMF for 8 h.

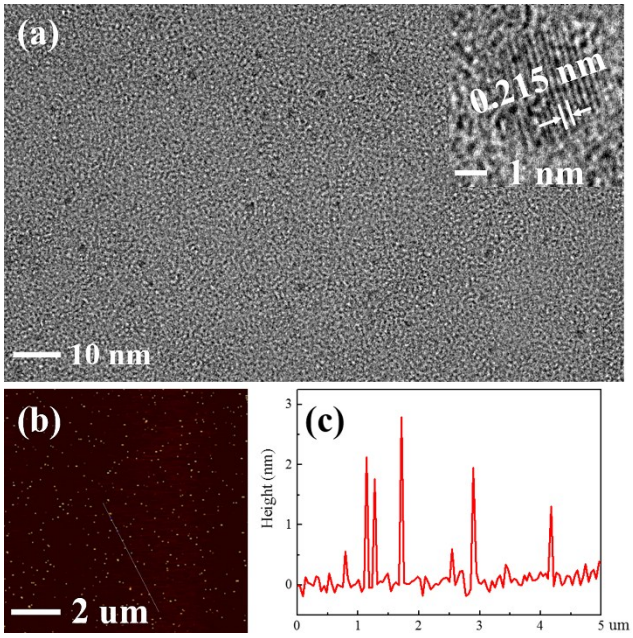

Fig. S3 A typical TEM image (a) and AFM image (b) of the BN QDs prepared by the sonication and solvothermal treatment of the bulk BN flakes in DMSO, and the height profile of the as-prepared BN QDs (c). Inset of (a): the HRTEM image of the BN QDs.

Table S1 The concentration of BN nanosheets and BN QDs in DMF and DMSO after different sonication time (centrifugated at 5000 rpm).

8 h	BN nanosheets (mg/mL)	BN QDs (mg/mL)	48 h	BN nanosheets (mg/mL)	BN QDs (mg/mL)
DMF	0.034	0.005	DMF	0.059	0.017
DMSO	0.076	0.011	DMSO	0.097	0.030

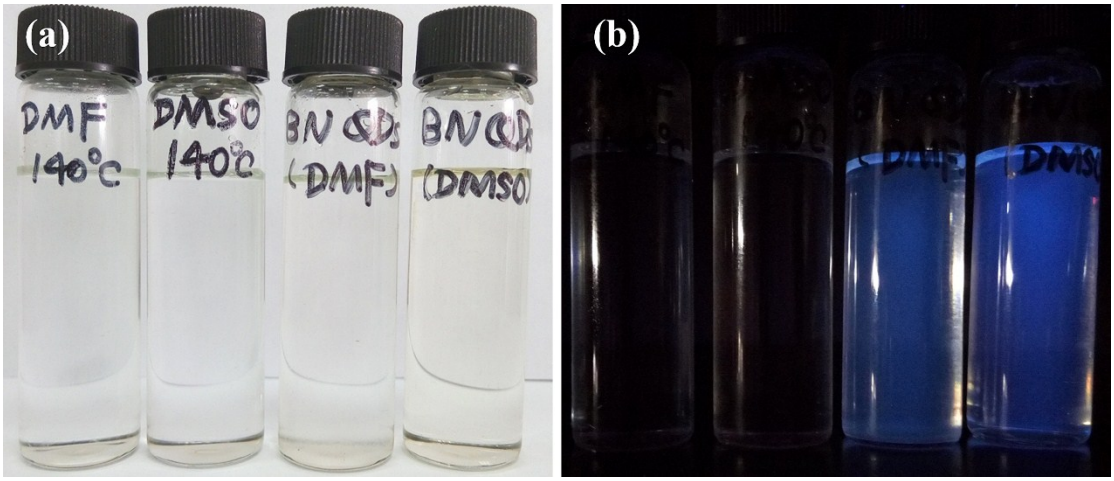

Fig. S4 Typical digital photograpghs of DMF, DMSO, DMF with the addtion of BN raw materials and DMSO with the addtion of BN raw materials in natural light (a) and under 365 nm UV radiation (b) after the same sonication-solvothermal process.

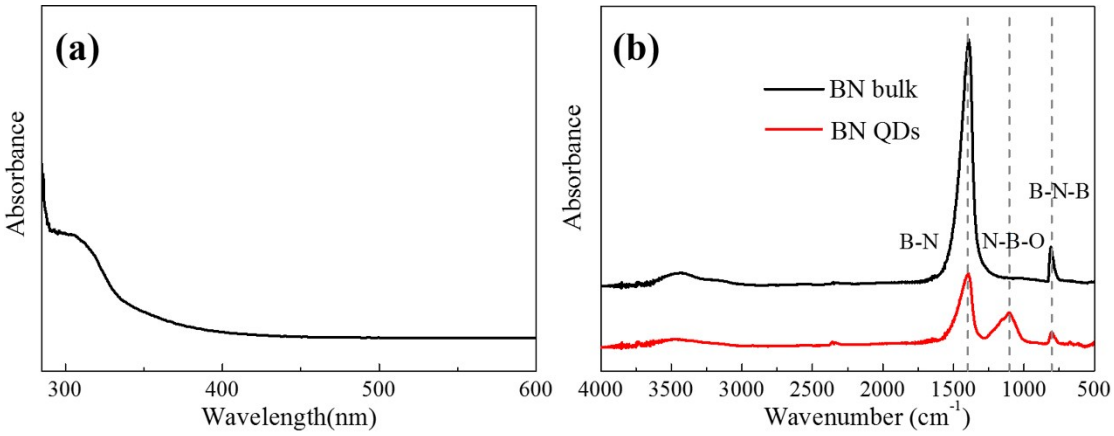

Fig. S5 UV-vis spectrum of the BN QDs and FTIR spectra of the bulk BN flakes and BN QDs.

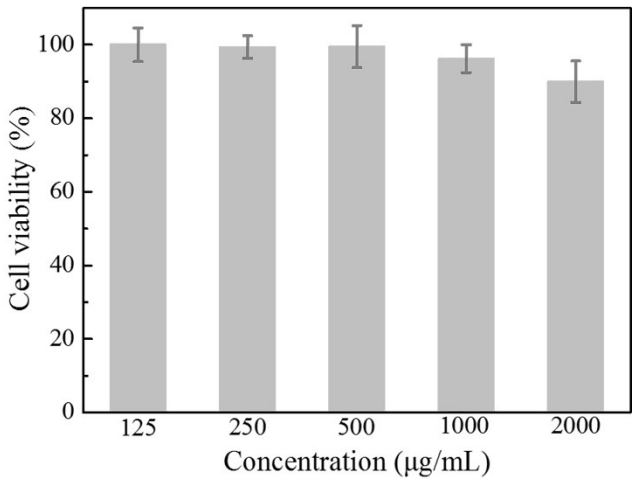

Fig. S6 Cell viability assay with HEK 293T cells treated with different concentrations of BN QDs.

Table S2 A summary of cell viabilities of different fluorescent QDs after 24 h.

Samples	Concentrations	Cell viabilities (normal human cells)
CdTe QDs	0.072 ug/ml	25 %[1]
CQDs	1720 ug/ml	82 %[2]
MoS_2 QDs	200 ug/ml	90 %[3]
MoS_2 QDs	2000 ug/ml	81 %[4]
WS_2 QDs	2000 ug/ml	83 %[4]
BN QDs	2000 ug/ml	90 % (current work)

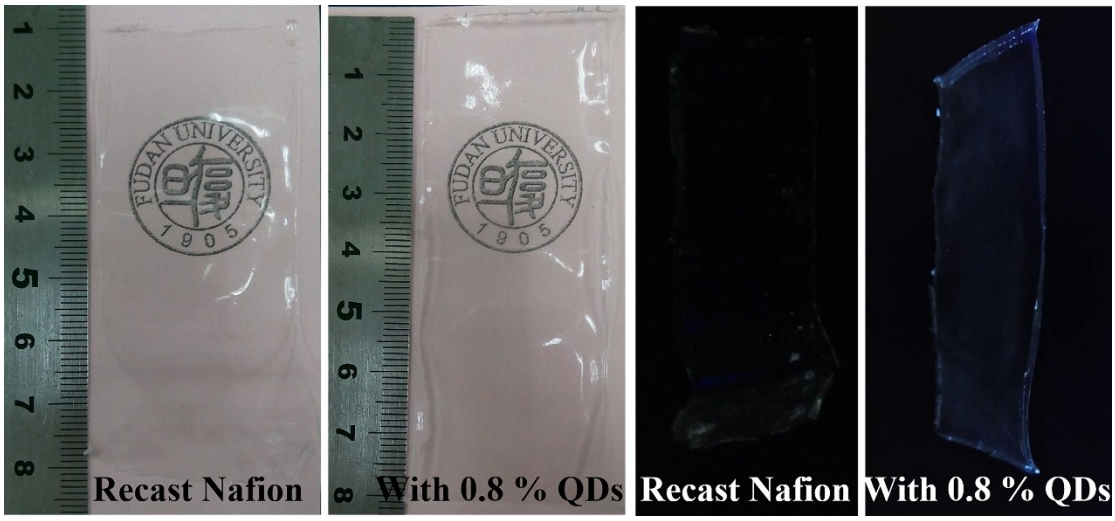

Fig. S7 Digital photographs of the as-prepared PEMs under visible light (left) and under 365 nm UV irradiation (right).

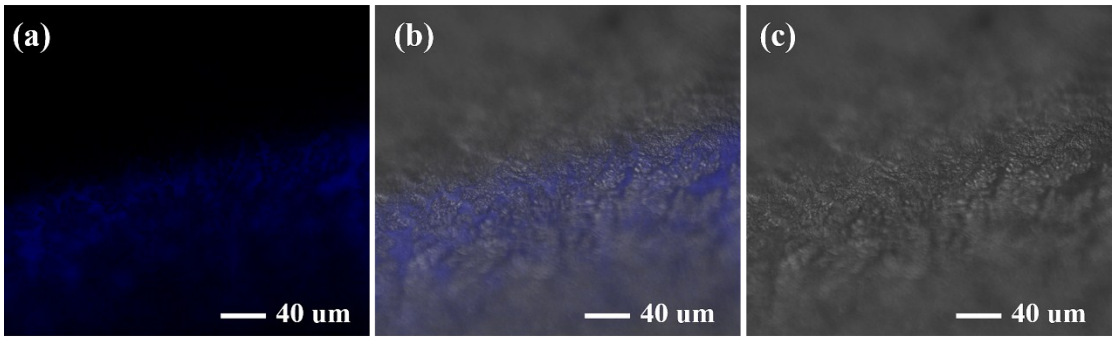

Fig. S8 (a) The CLSM image of labeled Nafion membrane with 0.8 wt% BN QDs, (b) the overlapped image of the darkfield image and brightfield image, (c) the corresponding brightfield image.

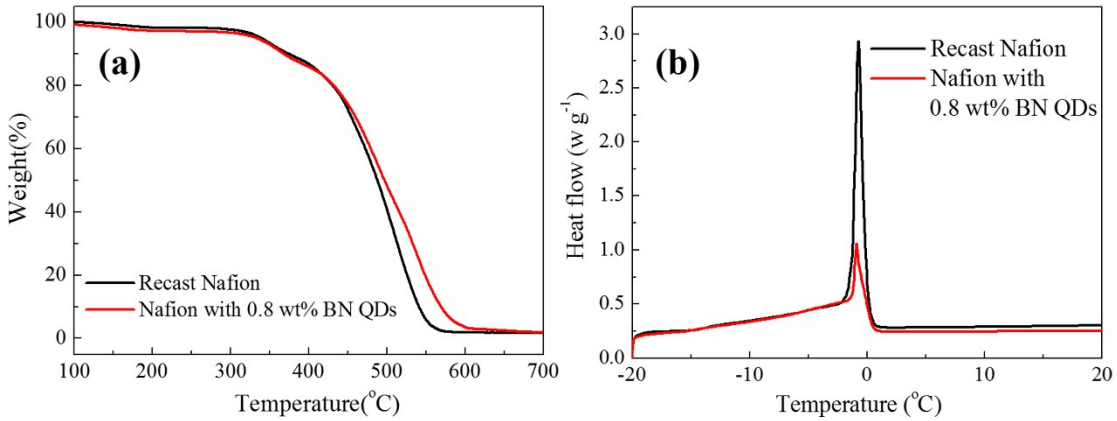

Fig. S9 TGA (a) and DSC (b) curves of the recast Nafion and 0.8 wt% BN QDs/Nafion.

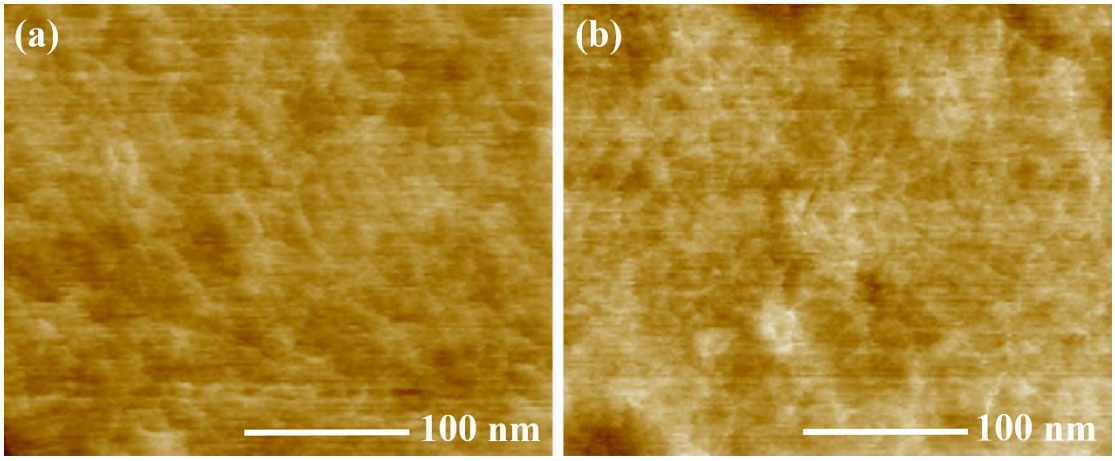

Fig. S10 Typical AFM imgaes of racast Nafion (a) and the Nafion membrane with 0.8 wt% BN QDs (b).

Notes and references

1. N. Chen, Y. He, Y. Su, X. Li, Q. Huang, H. Wang, X. Zhang, R. Tai and C. Fan, *Biomaterials*, 2012, **33**, 1238-1244.
2. P.-C. Hsu and H.-T. Chang, *Chem. Commun.*, 2012, **48**, 3984-3986.
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4. S. Xu, D. Li and P. Wu, *Adv. Funct. Mater.*, 2015, **25**, 1127-1136.