Electronic Supplementary Information (ESI) for

An Efficient Light-Scattering Functionalized TiO₂ Photoanodes Modified with Cyanobiphenyl-based Benzimidazole for Dye-Sensitized Solar Cells with Additive-Free Electrolytes

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**Fig. S1** $^1$H NMR spectrum of 1-bromo-6-(4-cyanobiphenyl-4'-oxy)hexane (BrCH).

**Fig. S2** $^1$H NMR spectrum of N-6-(4-cyanobiphenyl-4'-oxy)hexyl benzimidazole (NCHB).
In the TGA curve of NCHB, no obvious weight loss below 300 °C showed a good thermostability of NCHB. In addition, the relatively high melting point (133 °C) also indicated that NCHB could offer a high thermal transformation property, far beyond the operating temperature (50-80 °C) of the DSSCs.

**Fig. S3** TGA and DSC curves of NCHB.

**Fig. S4** UV absorption spectrum of NCHB film on FTO glass (FTO glass substrate as a baseline).