Electronic Supplementary Material (ESI) for Nanoscale.

Nanohybrid Conjugated Polyelectrolytes: Highly Photostable and Ultrabright Nanoparticles

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- **Table 1.** Summary of the dynamic light scattering of PVP and nanohybrid particles.
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- **Figure S2.** Average intensity changes of single particles traces at time equal to 0 (initial), 31 (maximum) and 240 seconds.
- **Figure S3.** Fluorescence intensity normalized to the nanohybrid signal acquired at 25°C. The polymer concentrations are: MPS-PPV=1.6×10^{-4}M (reported in monomer concentration) and PVP =5×10^{-5} M (reported in polymer concentration).
- **Figure S4.** (A) Fluorescence intensity and (B) Absorbance spectra of nanohybrid particles prepared by changing the order of addition of the two polymers. The polymer concentrations are: MPS-PPV=1.6×10^{-4}M (reported in monomer concentration) and PVP =5×10^{-5} M (reported in polymer concentration).
- **Total number of emitted photons:**

I. DLS measurements:

All the DLS measurements were done using with monochromatic light at 658 nm. Nanohybrid particles were suspended in water. The experiment was performed using Brookhaven 90Plus/BI-MAS.

Table 1: Summary of the dynamic light scattering of PVP and nanohybrid particles

	Hydrodynamic Diameter / nm
PVP Mw=10K	7.1
MPS-PPV PVP Mw=10K	8.2
PVP Mw=55K	**8.8**
MPS-PPV PVP Mw=55K	**16**
PVP Mw=360K	15.3
MPS-PPV PVP Mw=360K	19.6
PVP Mw=1300K	**16.2**
MPS-PPV PVP Mw=1300K	**25.2**

II. Photostability of the nanohybrid particles prepared with different PVP molecular weight:

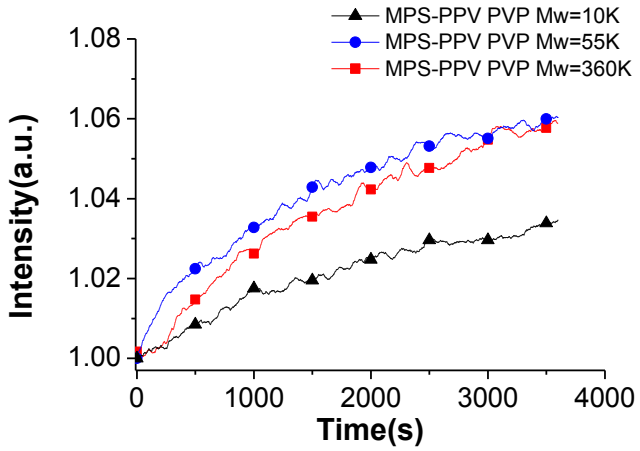

Figure S1: Intensity versus time trajectories of MPS-PPV and MPS-PPV_PVP (PVP:MPS-PPV 150:1 monomer ratio) nanohybrids using different PVP molecular weights (10K; 55K and 360K) upon continuous excitation at 450 nm. Measurements were done in 10 mM HEPES buffer pH=7.3 and 150 mM NaCl

III. Single particle intensity change over time:

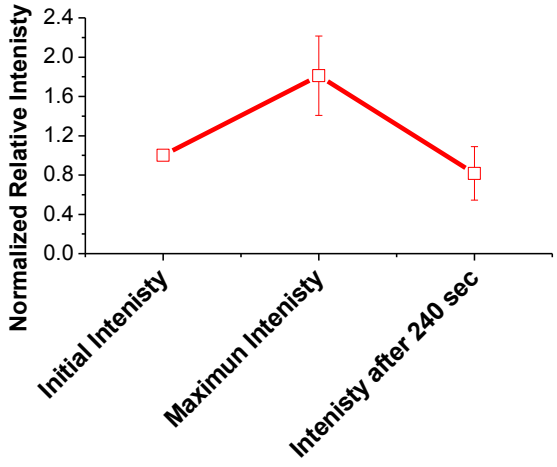

Figure S2: Average intensity changes of single particles traces at time equal to 0 (initial), 31 (maximum) and 240 seconds.

IV. Fluorescence intensity change with increasing temperature:

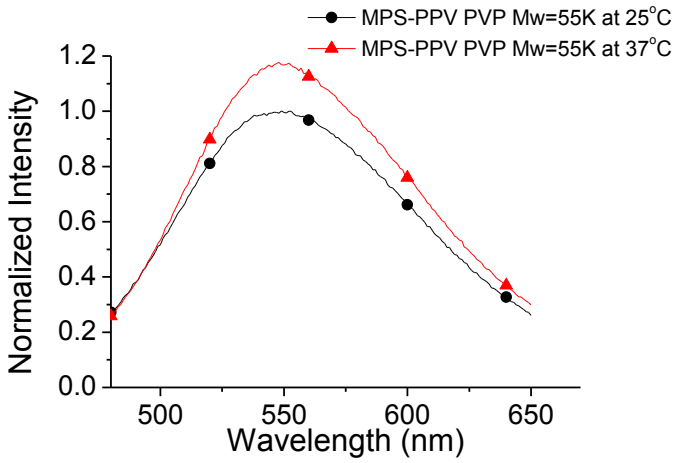

Figure S3. Fluorescence intensity normalized to the nanohybrid signal acquired at 25°C. The polymer concentrations are: MPS-PPV=1.6×10^{-4}M (reported in monomer concentration) and PVP =5×10^{-5} M(reported in polymer concentration). Measurements were done in 10 mM HEPES buffer pH=7.3 and 150 mM NaCl and emission spectra were acquired upon excitation at 450nm.

V. Tuning the intensity of the nanohybrid particles:

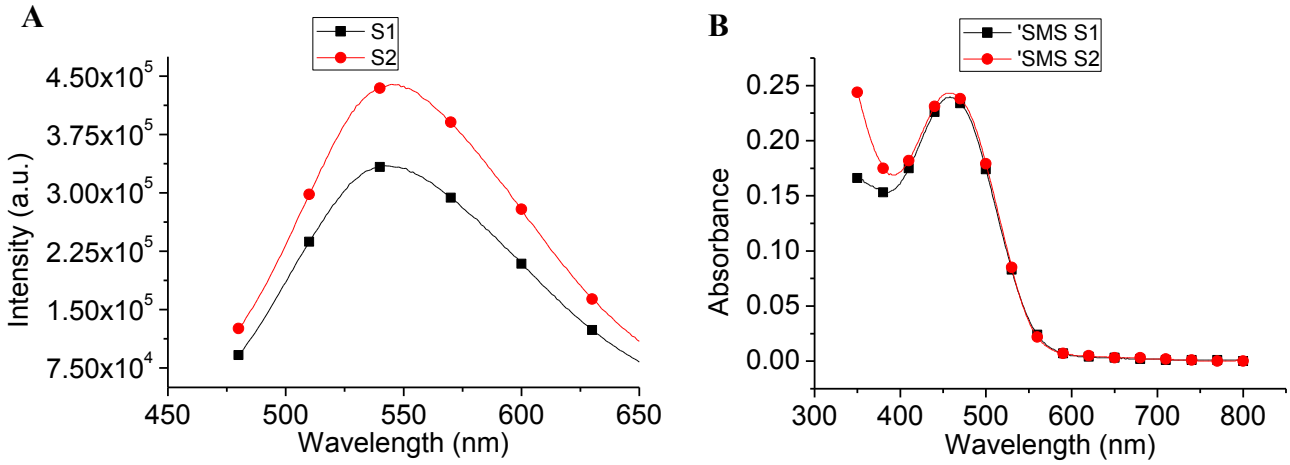

Figure S4. (A) Fluorescence intensity and (B) Absorbance spectra of nanohybrid particles prepared by changing the order of addition of the two polymers. The polymer concentrations are: MPS-PPV=1.6×10^{-4}M (reported in monomer concentration) and PVP =5×10^{-5} M(reported in

polymer concentration). All measurements were done in 10 mM HEPES buffer pH=7.3 and 150 mM NaCl and emission spectra were acquired upon excitation at 450nm.

VI. Total number of emitted photons:

The total amount of photons emitted per particle was calculated by integrating the intensity over time for individual particles for the experiment time window. The setup collection efficiency was estimated to be roughly 1% after accounting for the loss introduced by the objective collection efficiency, beam splitter, long path filter and the APD quantum efficiency.