Electronic Supplementary Material (ESI) for Nanoscale Horizons.

Supporting Information for

Strongly Polarized Color Conversion of Isotropic Colloidal Quantum Dots Coupled to Fano Resonances

Kivanc Gungor[1], Onur Erdem[1], Burak Guzelturk[1], Emre Unal[1], Shinae Jun[2], Eunjoo Jang[2], and Hilmi Volkan Demir,[1,3,*]

[1] Department of Electrical and Electronics Engineering, Department of Physics, UNAM--Institute of Materials Science and Nanotechnology and National Nanotechnology Research Center, Bilkent University, Ankara, 06800, Turkey

[2] Inorganic Material Laboratory, Material Research Center, Samsung Advanced Institute of Technology, Samsung Electronics Co., 130 Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do 443-803, South Korea

[3] Luminous! Center of Excellence for Semiconductor Lighting and Displays, School of Electrical and Electronic Engineering, School of Physical and Mathematical Sciences, and School of Materials Science and Engineering, Nanyang Technological University, Singapore 639798, Singapore

*Email: volkan@stanfordalumni.org

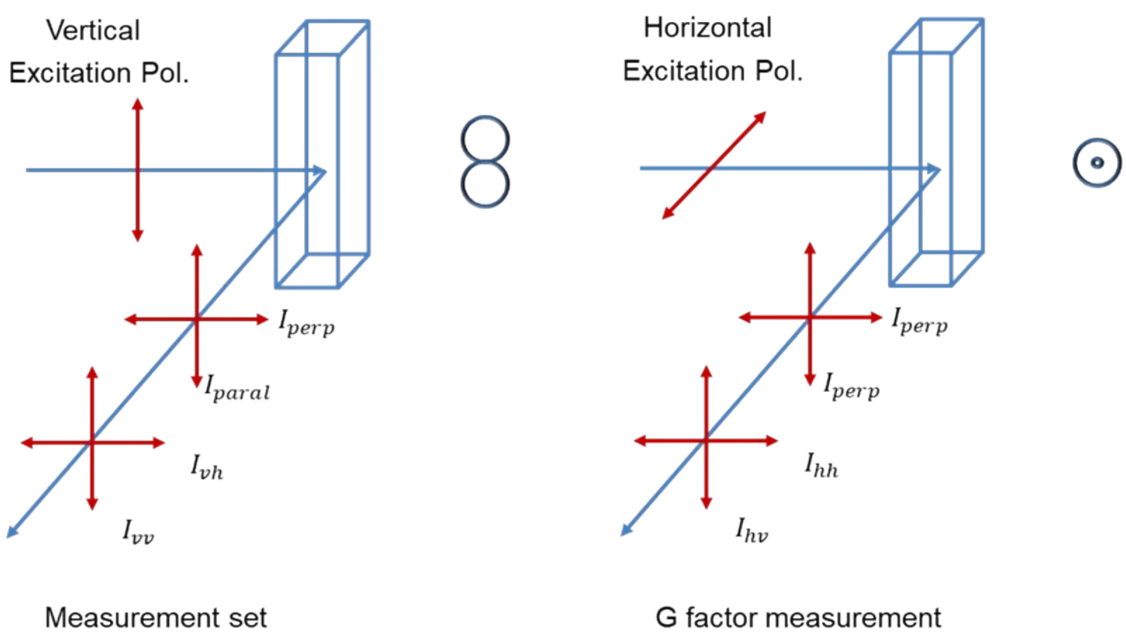

Figure S1: Conventional in solution anisotropy measurement configuration using time-resolved fluorescence measurement setup. In vertical polarization excitation, only vertical dipole is created and allows to measure the anisotropy in this configuration. To eliminate the system related anisotropies, G factor calculation is required. The created dipole in horizontal configuration is isotropic with respect to the collection end and any measured anisotropy can be attributed as a system-related related anisotropy which can be used to eliminate any system-related anisotropy during the measurements.

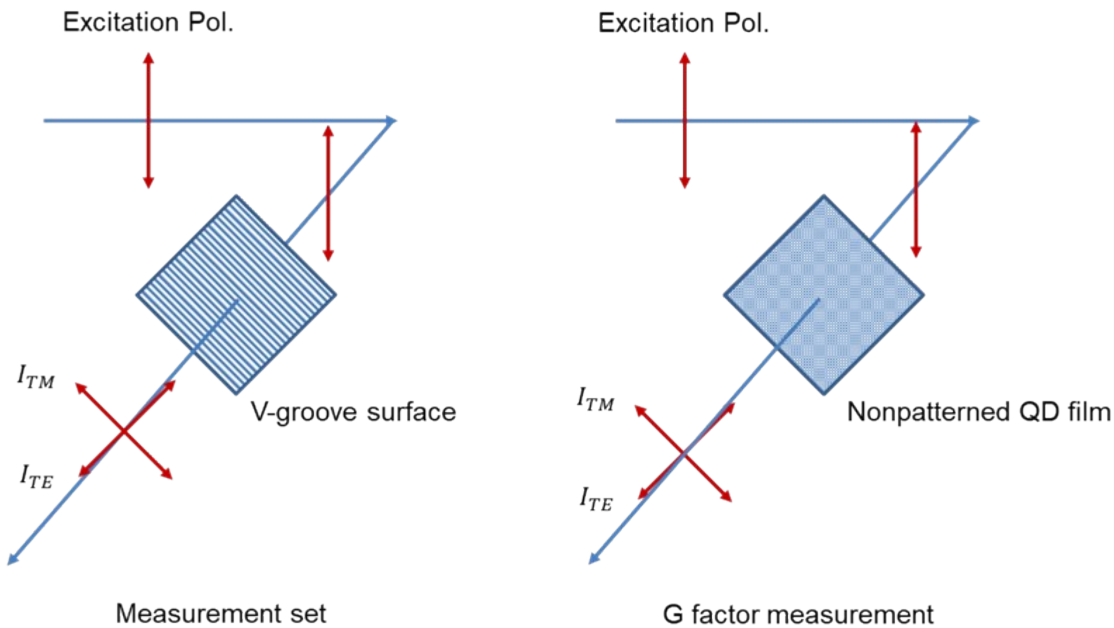

Figure S2: Our proposed anisotropy measurement configuration for in-film measurements. 45° placed groove orientation of the sample ensures the excitation both polarization states. G factor is calculated from nonpatterned QD film which would give 0 anisotropy inherently. TM and TE polarization measurements are corrected according to this measured G factor.

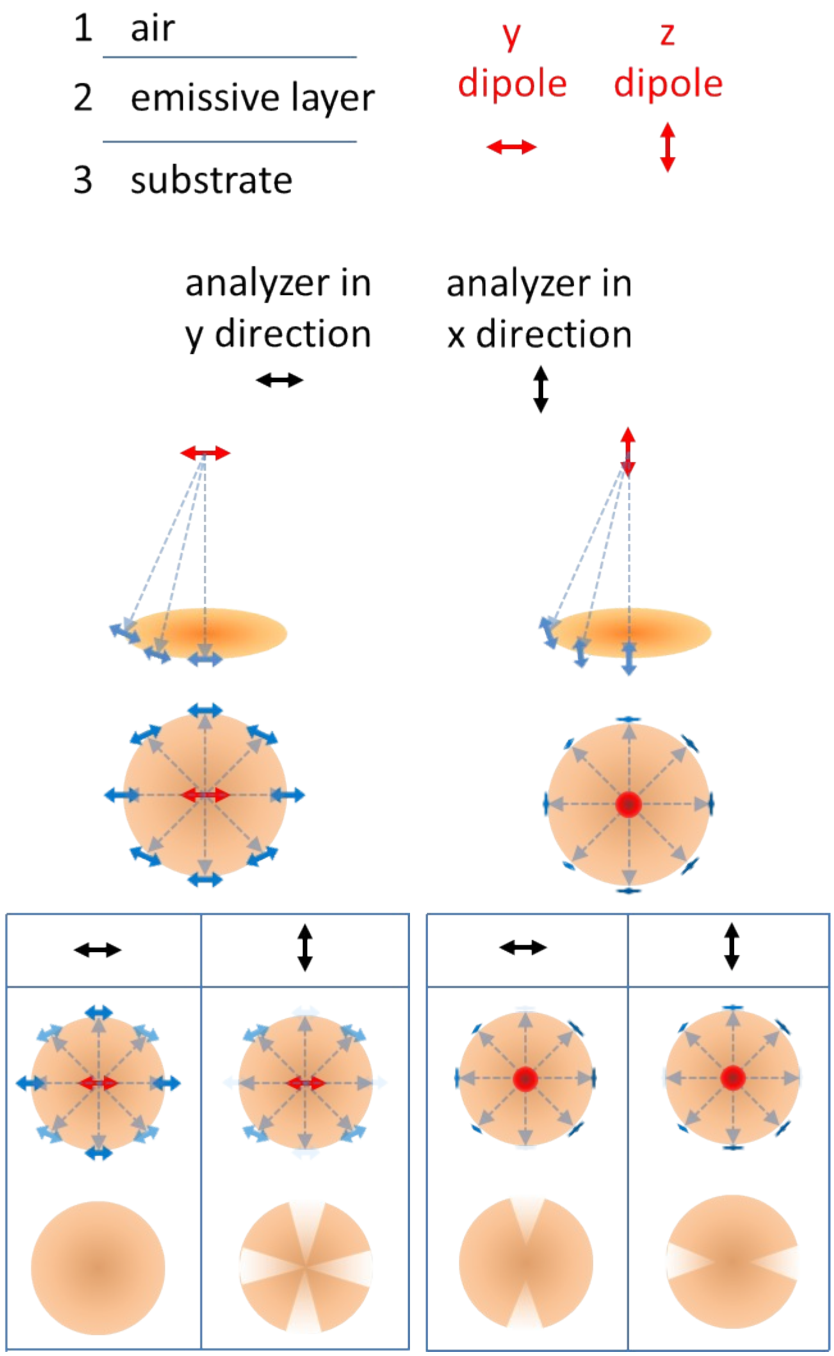

Figure S3: BFP pattern formation of aligned dipoles. When a polarizer is placed at the collection end, the modified polarization state of the light can be identified according to the propagation direction.

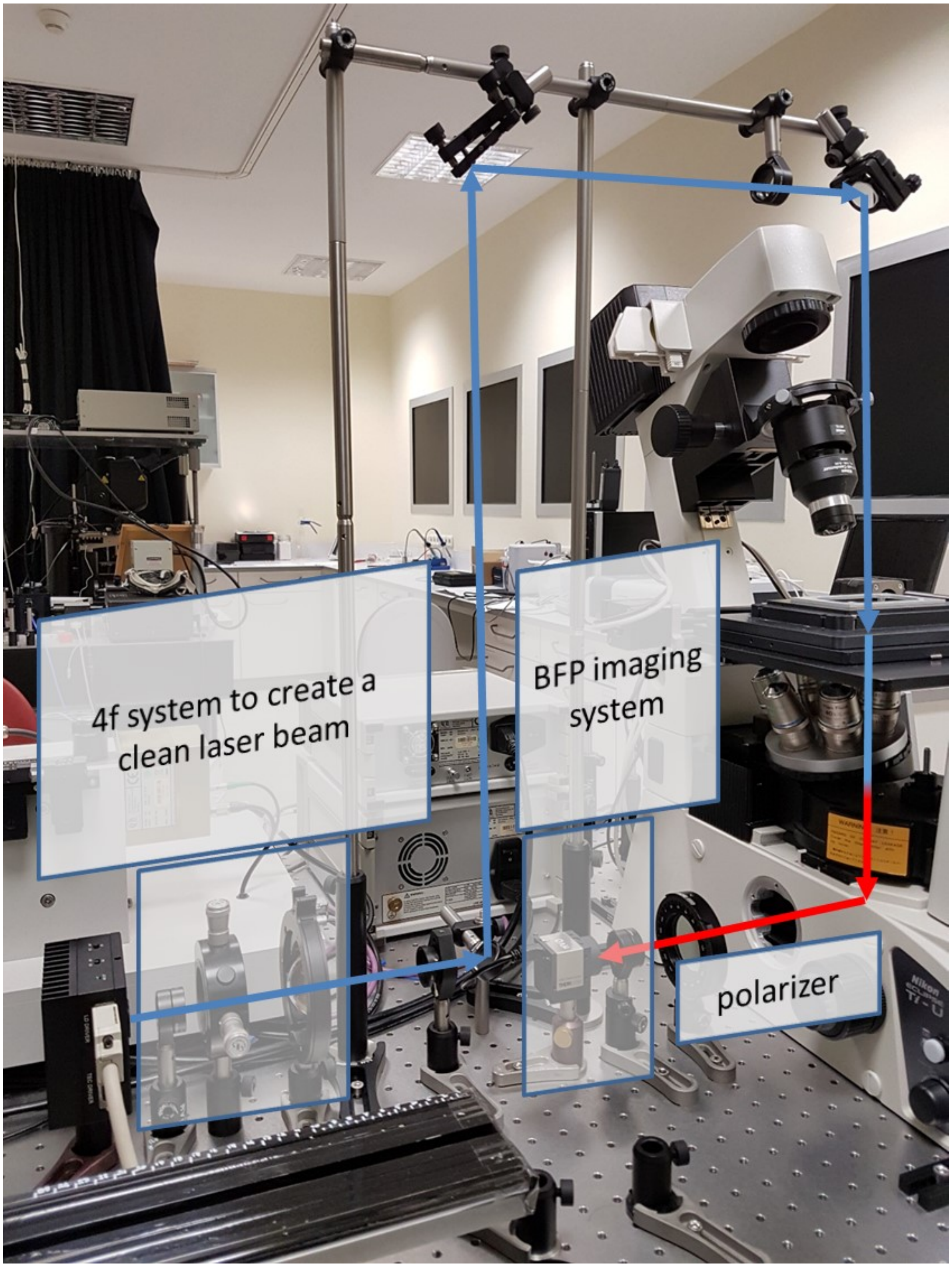

Figure S4: Our BFP imaging setup used to measure the dipole orientations of our emitters. A laser beam excites our nanocrystals from the top and a microscope objective collects the emitted light. Using a Bertrand lens, the BFP is imaged on CCD.

Table S1: Fitting parameters of the multiexponential PL decays, together with the amplitude-averaged lifetimes

Decay	A1	τ_1 (ns)	A_2	τ_2 (ns)	A_3	τ_3 (ns)	A_4	τ_4 (ns)	τ_{avg} (ns)
Only-QD	566 ± 14.4	21.4 ± 0.39	880 ± 31.4	9.31 ± 0.33	613 ± 144	0.87 ± 0.26			**10.1 ± 0.78**
QD on gold	27.9 ± 4.17	23.8 ± 2.72	575 ± 41.4	3.68 ± 0.17	4154 ± 172	1.03 ± 0.036	7311 ± 822	0.145 ± 0.018	**0.672 ± 0.055**
QD on v-BLU (TM)	65.3 ± 4.98	28.3 ± 1.7	721 ± 51.3	3.83 ± 0.182	14398 ± 398	0.74 ± 0.016	39000 ± 1610	0.158 ± 0.007	**0.395 ± 0.018**
QD on v-BLU (TM)	76 ± 8.2	10.9 ± 0.9	904 ± 79	1.29 ±0.089	3688 ± 363	0.24 ± 0.024			**0.613 ± 0.067**