

Supplementary Information

Single-particle spectroscopy of I-III-VI semiconductor nanocrystals: spectral diffusion and suppression of blinking by two-color excitation

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x	Ag	In	Zn
0.3	14	22	64
0.7	34	40	26
1.0	48	52	0.0

Table S1. Elemental composition of the synthesized ZAIS nanocrystals measured by EDX

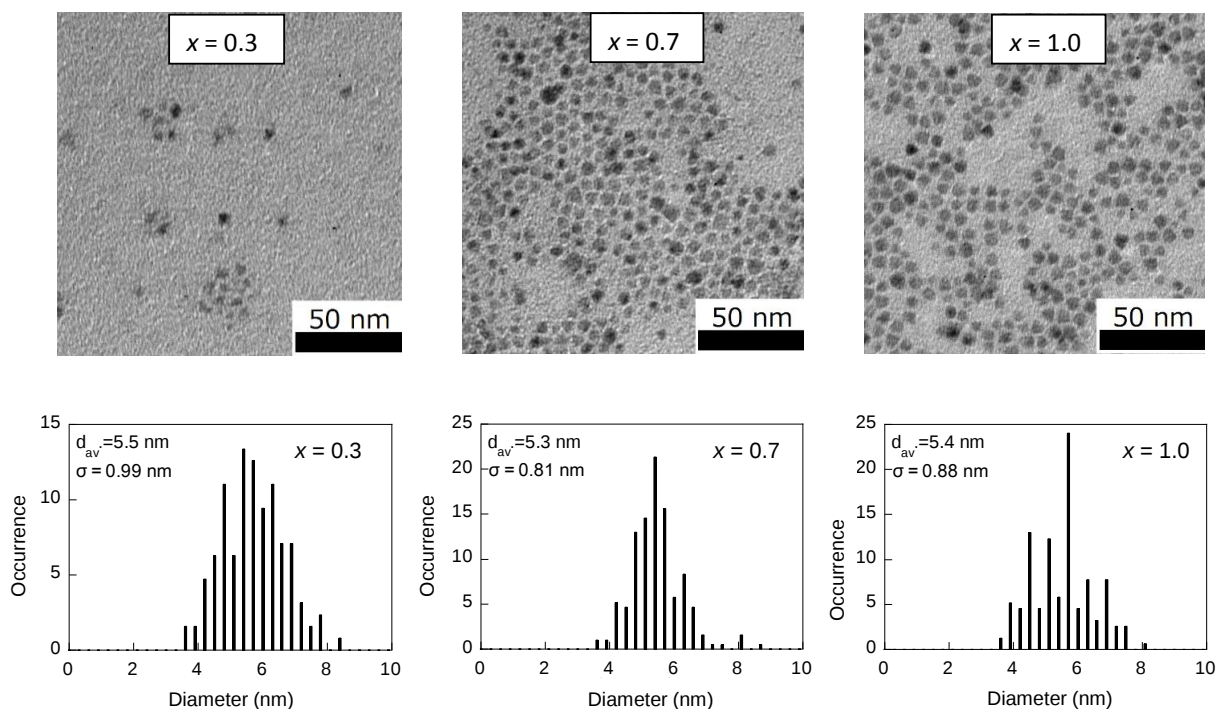


Fig. S1. TEM images (top) and distributions of particle size (bottom) of the three compositions. The size distributions contain the statistical parameters of average size d_{av} and standard deviation σ .

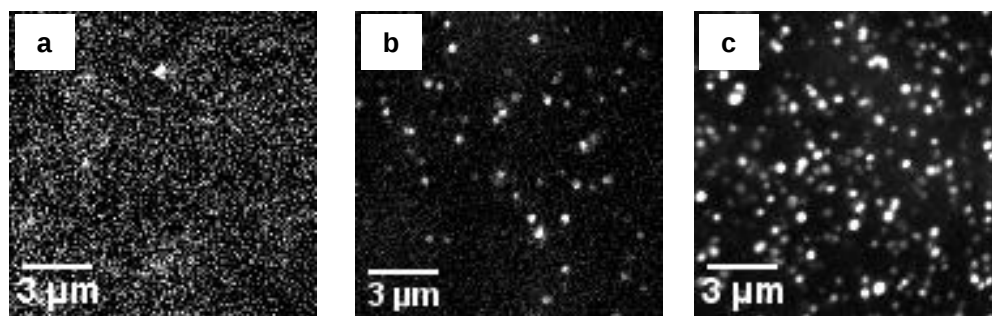


Fig. S2. PL imaging with 376 nm (3.30 eV) laser excitation. **a**, Cleaned quartz substrate only. **b**, spin-coated dilute suspension of single ZAIS NCs on quartz substrate. **c**, Spin-coated NCs at a concentration 20 times that of **b**.

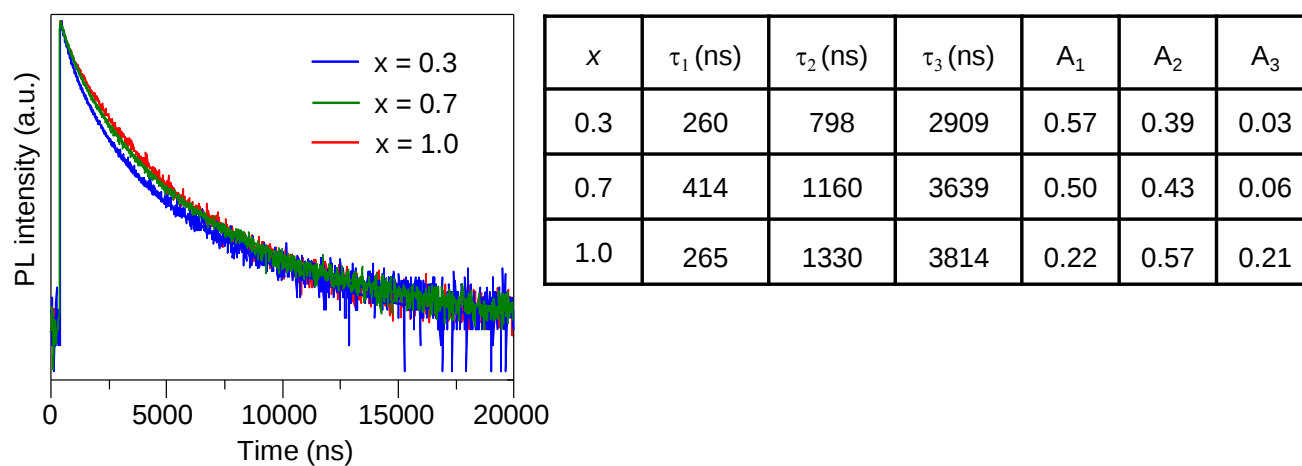


Fig. S3. PL intensity decays measured for solutions of NCs of the three ZAIS compositions, excited at 3.4 eV and monitored at the maxima of their PL bands. The table shows parameters of 3-exponential fitting to the decays.

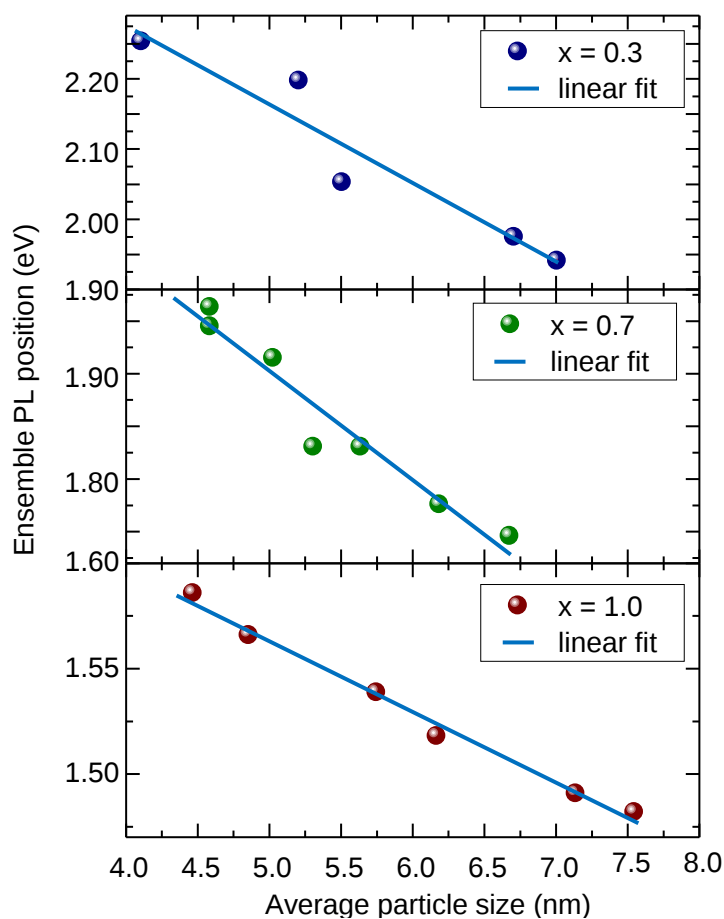


Fig. S4. Ensemble photoluminescence spectral position plotted vs. average nanoparticle size for the three ZAIS compositions. The symbols are experimental values taken from ref. 6, the solid lines are linear fits to the data. The fitting parameters were used together with the size distributions in Fig. S1 to calculate the expected distributions of the single NC spectral PL positions presented in Fig. 1a-c.

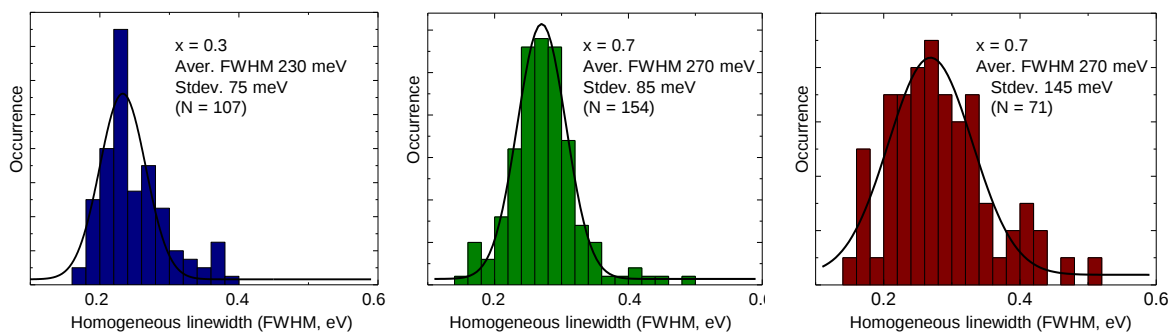


Fig. S5. Distributions of single particle homogeneous linewidths for the three compositions. Legends represent average FWHM and its standard deviation obtained from Gaussian fitting of the distributions.

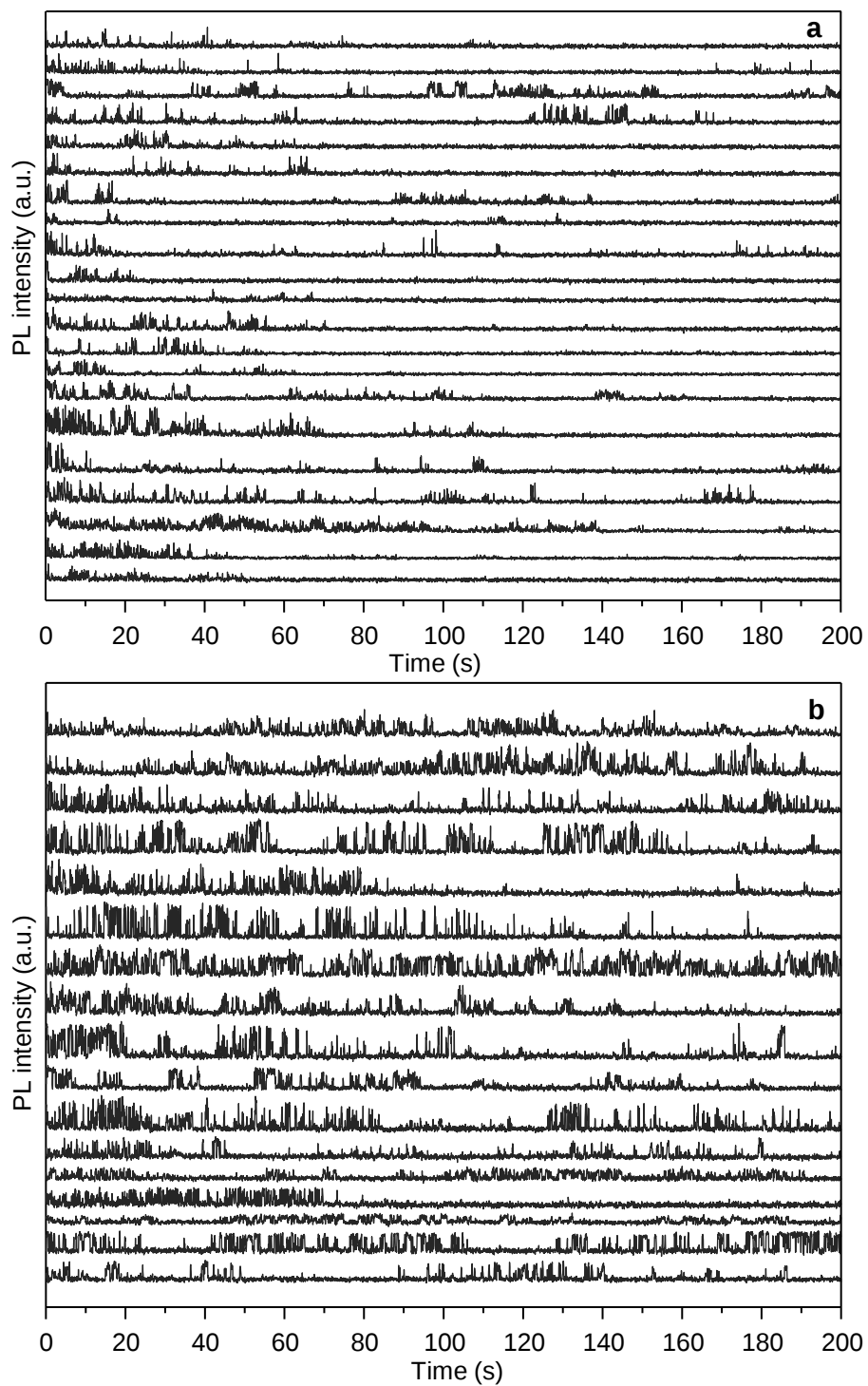


Fig. S6. Typical PL intensity time traces for several nanocrystals of the $x = 0.3$ (a) and $x = 0.7$ (b) samples. The PL was excited with 375 nm (3.30 eV) laser.

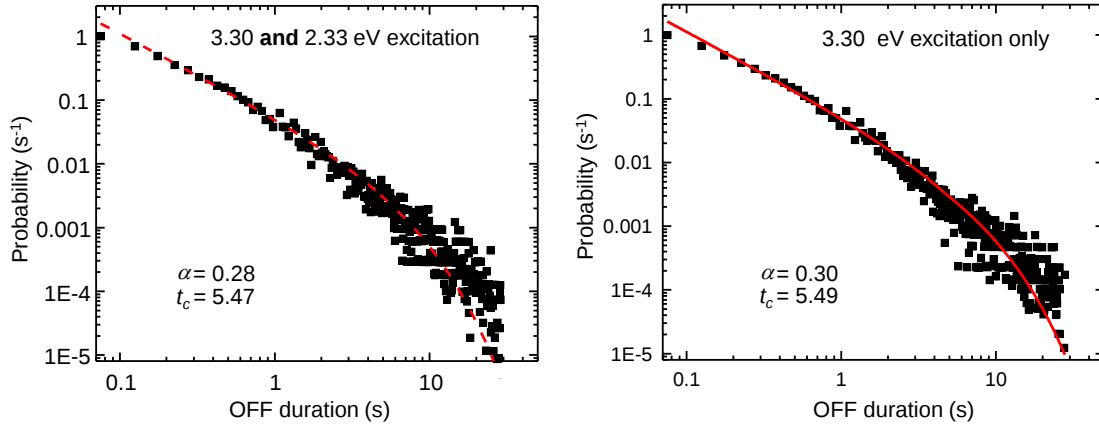


Fig. S7. Distributions of OFF times of the intensity traces for the $x = 0.3$ sample for the simultaneous (3.30 and 2.33 eV) laser excitation (left) and for the 3.30 eV only excitation (right). The red lines are fits to the truncated power law with the fitting parameters indicated in the figure frames.