

**Determination of atenolol based on the reversion of the
fluorescence resonance energy transfer between AgInS₂
quantum dots and Au nanoparticles**

Rafael C. Castro, André F. R. Lopes, José X. Soares, David S. M. Ribeiro*, João L. M.
Santos*

*LAQV, REQUIMTE, Department of Chemical Sciences, Laboratory of Applied
Chemistry, Faculty of Pharmacy, University of Porto, Rua de Jorge Viterbo Ferreira n^o
228, 4050-313 Porto, Portugal*

Supplementary Material

Table S1. Experimental conditions for the MW synthesis of D-penicillamine-capped AgInS₂ QDs

	570 nm-AIS QDs	568 nm-AIS QDs	557 nm-AIS QDs	561 nm-AIS/ZnS QDs
AgNO₃ (μmol)*	10	7.5	5	10
NH₄OH (μmol)*	50	50	50	50
D-Pen (μmol)*	150	150	150	150
InCl₃ (μmol)*	100	100	100	100
Na₂S.9H₂O(μmol)*	125	125	125	125
Adjusted pH	7.5	7.5	7.5	7.5
Time 1 (min)	10	10	10	10
Temperature 1 (°C)	80	80	80	80
ZnNO₃ (μmol)*	n.a.	n.a.	n.a.	150
D- Pen (μmol)*	n.a.	n.a.	n.a.	150
NH₄OH(μmol)*	n.a.	n.a.	n.a.	150
Time 2 (min)*	n.a.	n.a.	n.a.	10
Temperature 2 (°C)	n.a.	n.a.	n.a.	60

* Final volume was 25.0 mL

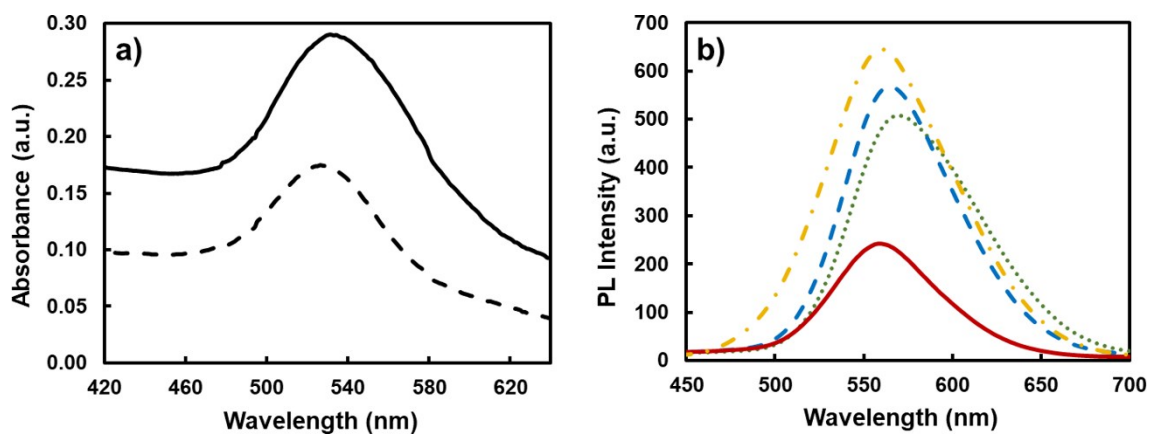


Fig. S1. **a)** Absorption spectra of AuNPs stabilized with cysteamine (black dashed line) and citrate (black full line). **b)** PL spectra of AIS QDs with Ag:In:S molar ratio of 0.1:1:1.25 (green dotted line), 0.075:1:1.25 (blue dashed line) and 0.05:1:1.25 (red full line) and AIS/ZnS QDs with molar ratio of 0.1:1:1.25 (orange dashed and dotted line).

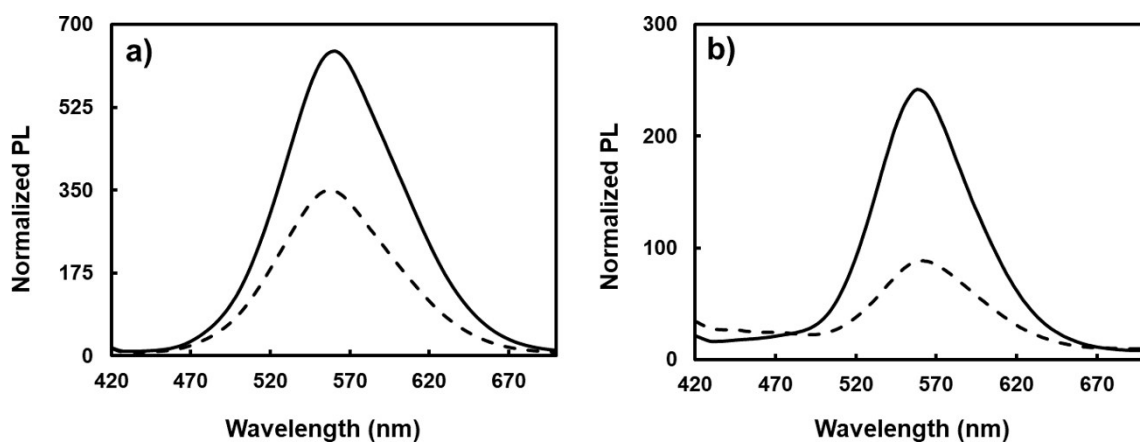


Fig. S2. **a)** AIS/ZnS QDs PL spectra before (full line) and after lyophilization (dashed line). **b)** PL spectra of AIS QDs before (full line) and after lyophilization (dashed line).

Table S2. PL inhibition of ternary QDs in the presence of different AuNPs volumes.

% PL Inhibition				
AuNPs volume (μL)	AIS/ZnS QDs + CA-AuNPs	AIS QDs + CA-AuNPs	AIS/ZnS QDs + Citrate-AuNPs	AIS QDs + Citrate-AuNPs
2.5	26.77	n.s.v.	2.38	n.s.v.
5	38.89	n.s.v.	6.49	n.s.v.
10	53.07	7.6	10.63	n.s.v.
15	60.72	-	21.78	n.s.v.
20	71.01	23.45	22.22	n.s.v.
25	81.11	-	24.06	n.s.v.
30	83.7	26.38	26.99	n.s.v.
40	-	39.12	35.06	n.s.v.
50	-	38.37	38.15	n.s.v.
60	-	41.35	-	n.s.v.
70	-	46.89	-	n.s.v.
80	-	-	49.7	n.s.v.
100	-	-	66.02	5.37
150	-	57.68	-	-
200	-	64.43	-	18.7
300	-	72.92	-	34.84
400	-	-	-	44.54
500	-	-	-	54.49

* n.s.v. - no significant variation

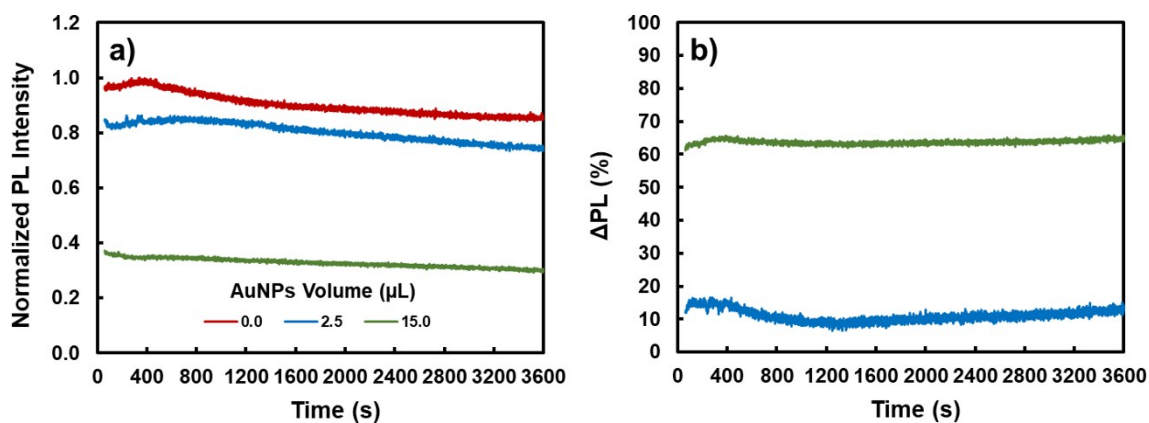


Fig. S3. **a)** Assessment of stability of QDs PL intensity in absence and presence of AuNPs at two different concentration levels. **b)** Monitoring of PL inhibition rate of the FRET process between AIS/ZnS QDs and 2.5 μL (blue line) and 15.0 μL (green line) cysteamine-AuNPs.

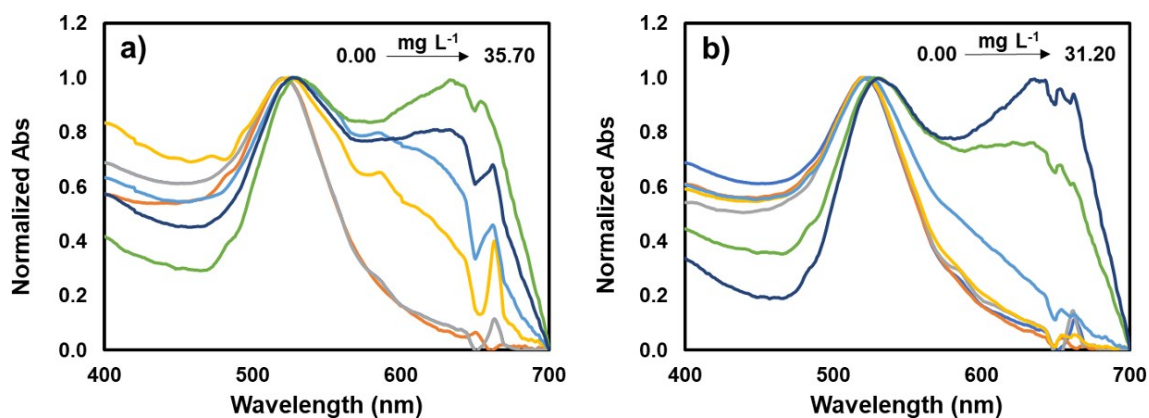


Fig. S4. Normalized absorbance spectra of CA-AuNPs in the absence and presence of increasing concentration of β blockers drugs: **a)** atenolol; and **b)** nadolol.