

## Supporting Information

### Dynamics of semiconducting nanocrystals uptake into mesoporous TiO<sub>2</sub> thick films by electrophoretic deposition

Lei Jin,<sup>a</sup> Haiguang Zhao,<sup>a,b</sup> Dongling Ma,<sup>a</sup> Alberto Vomiero,<sup>\*a,b,c</sup> Federico Rosei<sup>\*a,d</sup>

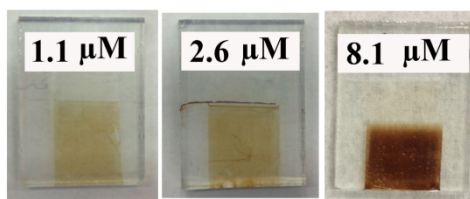
*a* Institut National de la Recherche Scientifique, 1650 Boulevard Lionel-Boulet, Varennes, J3X 1S2, Québec, Canada. Prof. Federico Rosei E-mail: [rosei@emt.inrs.ca](mailto:rosei@emt.inrs.ca)

*b* CNR-INO SENSOR Lab, Via Branze 45, 25123 Brescia, Italy.

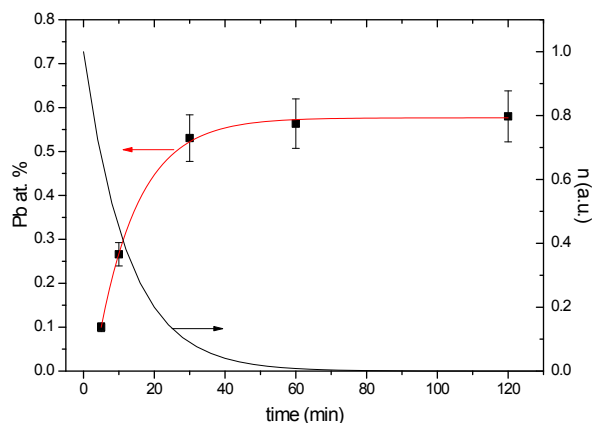
*c* Luleå University of Technology, 971 98 Luleå, Sweden. Prof. Alberto Vomiero E-mail: [alberto.vomiero@ltu.se](mailto:alberto.vomiero@ltu.se)

*d* Center for Self-Assembled Chemical Structures, McGill University, H3A 2K6 Montreal, Québec, Canada

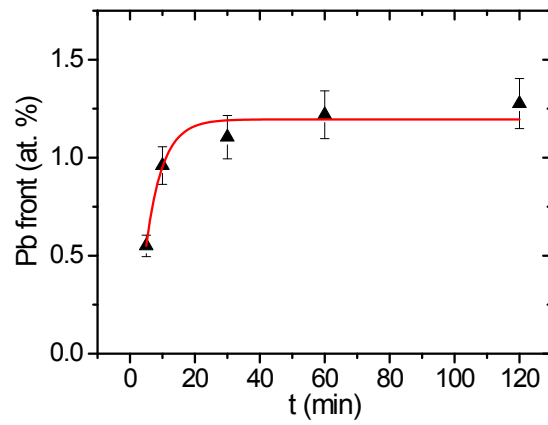
#### Supporting figures



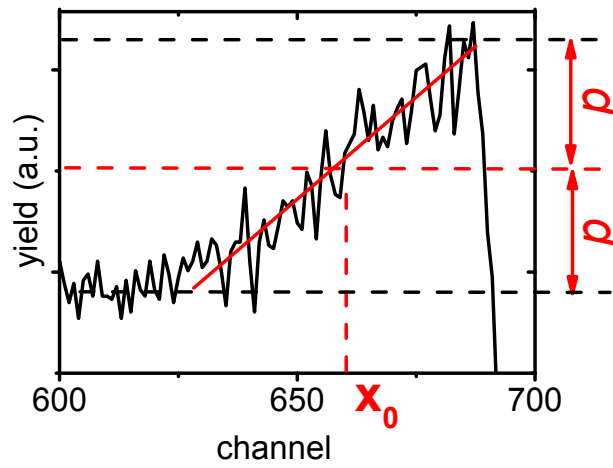
**Figure S1** PbS@Cds QDs, whose diameters are around 3.68 nm, with different concentration were deposited into TiO<sub>2</sub> film after 1h EPD.



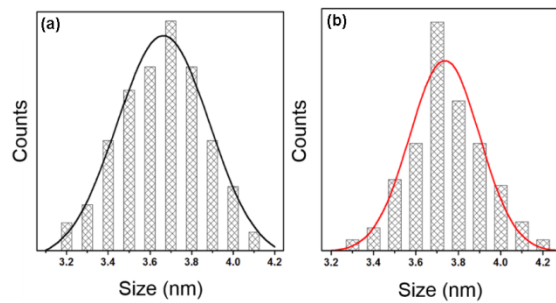
**Figure S2** Pb atomic ratio as a function of EPD time at the interface of TiO<sub>2</sub>/FTO for PbS@ Cds\_L (red line). Black line corresponds to the change of the curvature.



**Figure S3** Pb atomic ration as a function of EPD time at the surface of TiO<sub>2</sub> film of PbS@ CdS\_L.



**Figure S4** Illustration of the procedure to determine penetration depth of Pb,  $x_0$ , from a standard RBS spectrum.



**Figure S5** Size distributions of PbS\_M (a) and PbS/CdS\_M QDs (b).