SUPPORTING INFORMATION

Plasmon enhanced fluorescence with aggregated shell-isolated nanoparticles (SHINEF).

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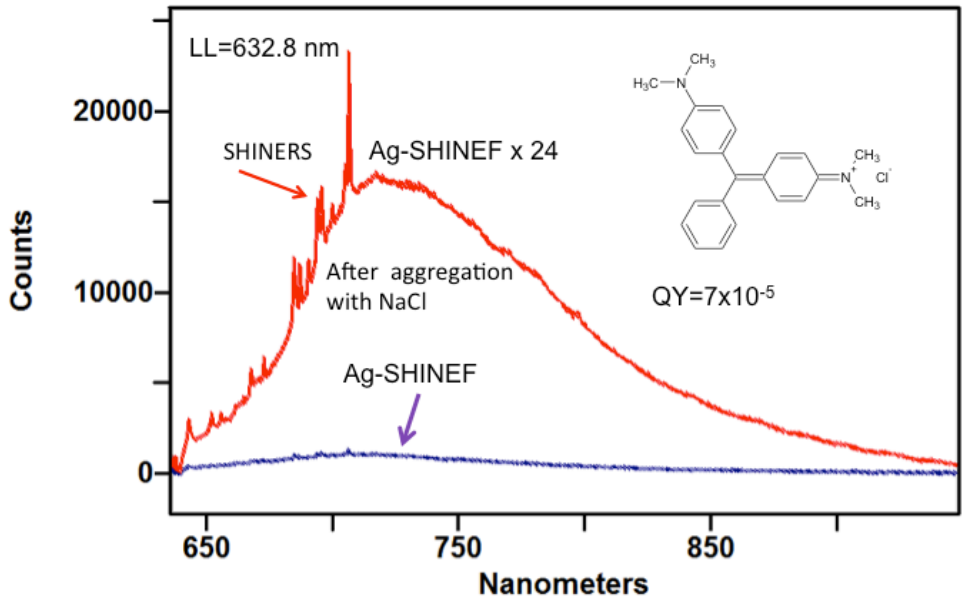
Abstract

Shell-isolated nanoparticles (SHINs) nanostructures provide a versatile substrate where the localized surface plasmon resonances (LSPR) are well-defined. For SHINEF the silver (or gold) metal core is protected by the SiO_2 coating, which is thicker than the critical distance for minimum quenching by the metal. Here, we discuss the results obtained with aggregated SHIN nanoparticles with a gold core and silver core producing SHINEF in solution, in Layer-by-Layer (LbL) and Langmuir-Blodgett (LB) samples fabricated using fluorophores with different quantum yield. The SHINEF experiments include the study of SHIN aggregation effect in solution, and controlled SHIN surface concentration via spraying.



S1. The aggregating effect of the NaCl electrolyte on SHINEF and SHINERS enhancement is illustrated for MG in solution, recorded with the 632.8 nm laser line.

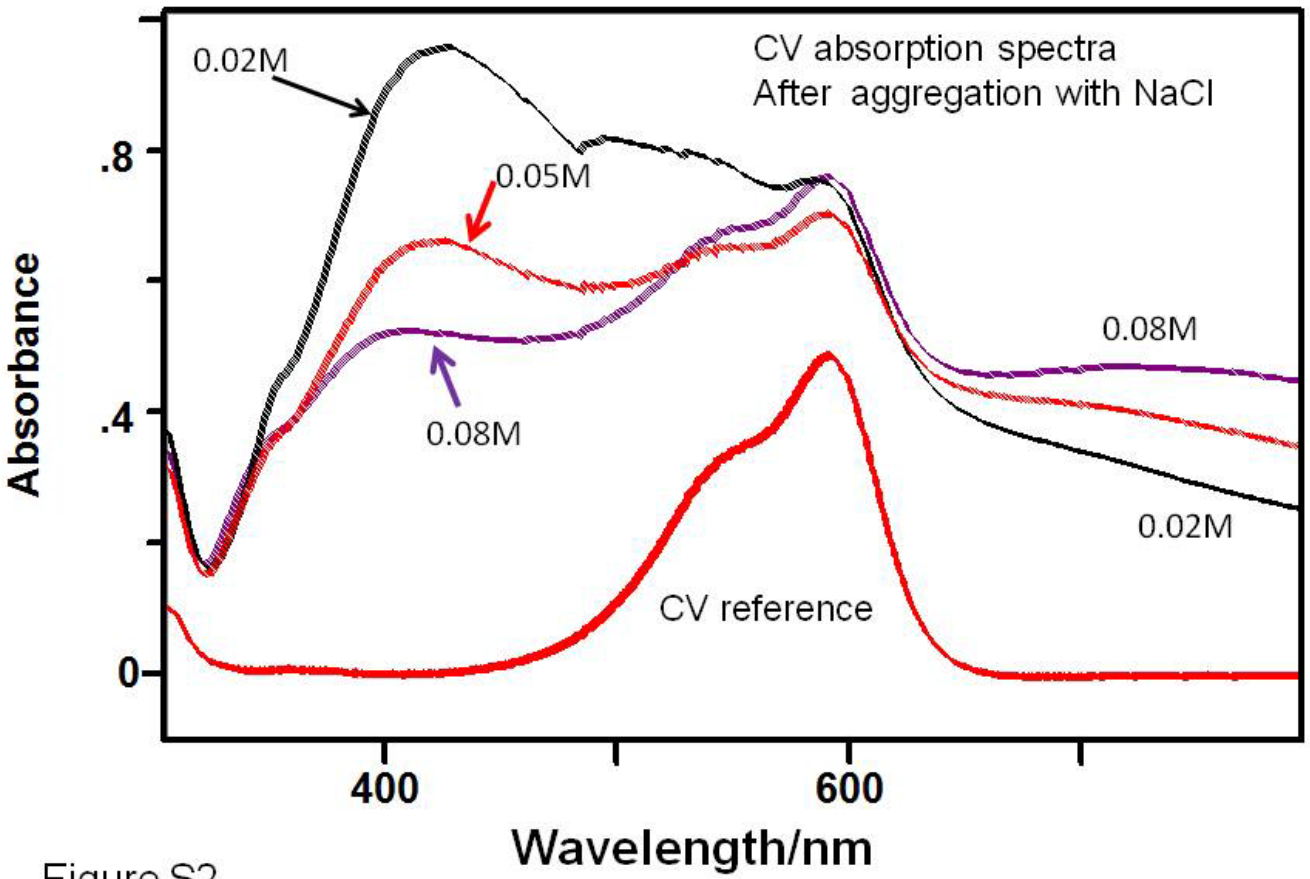
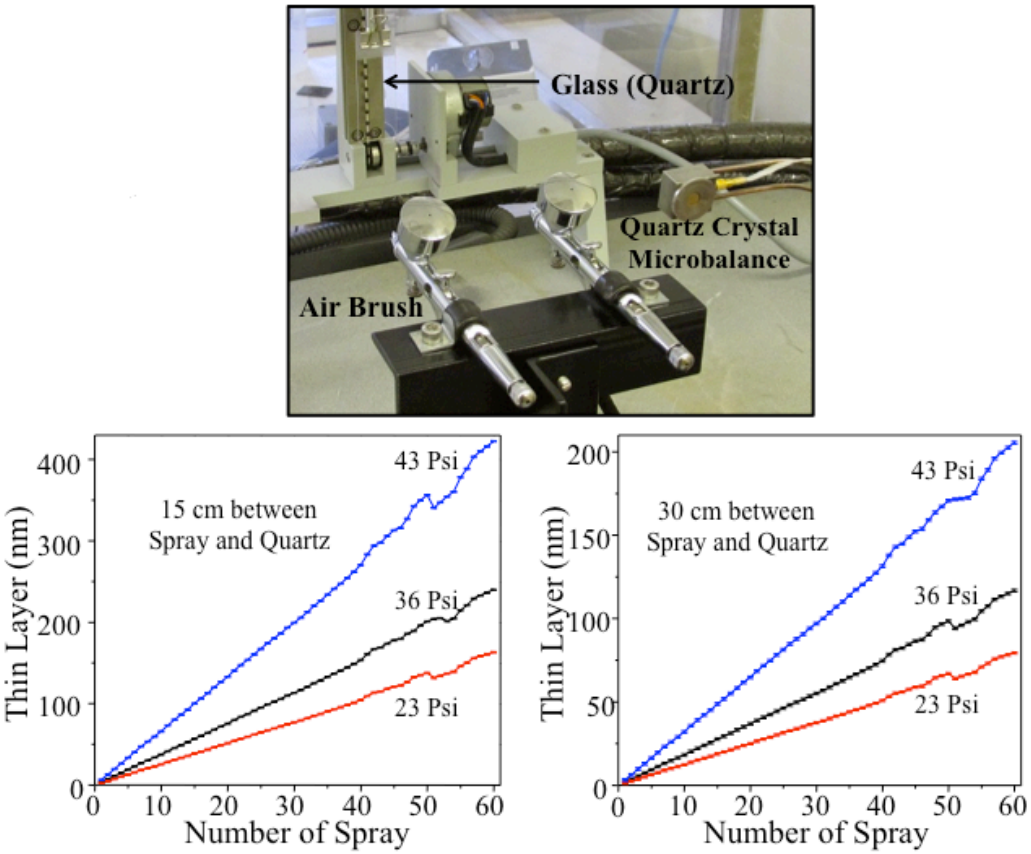


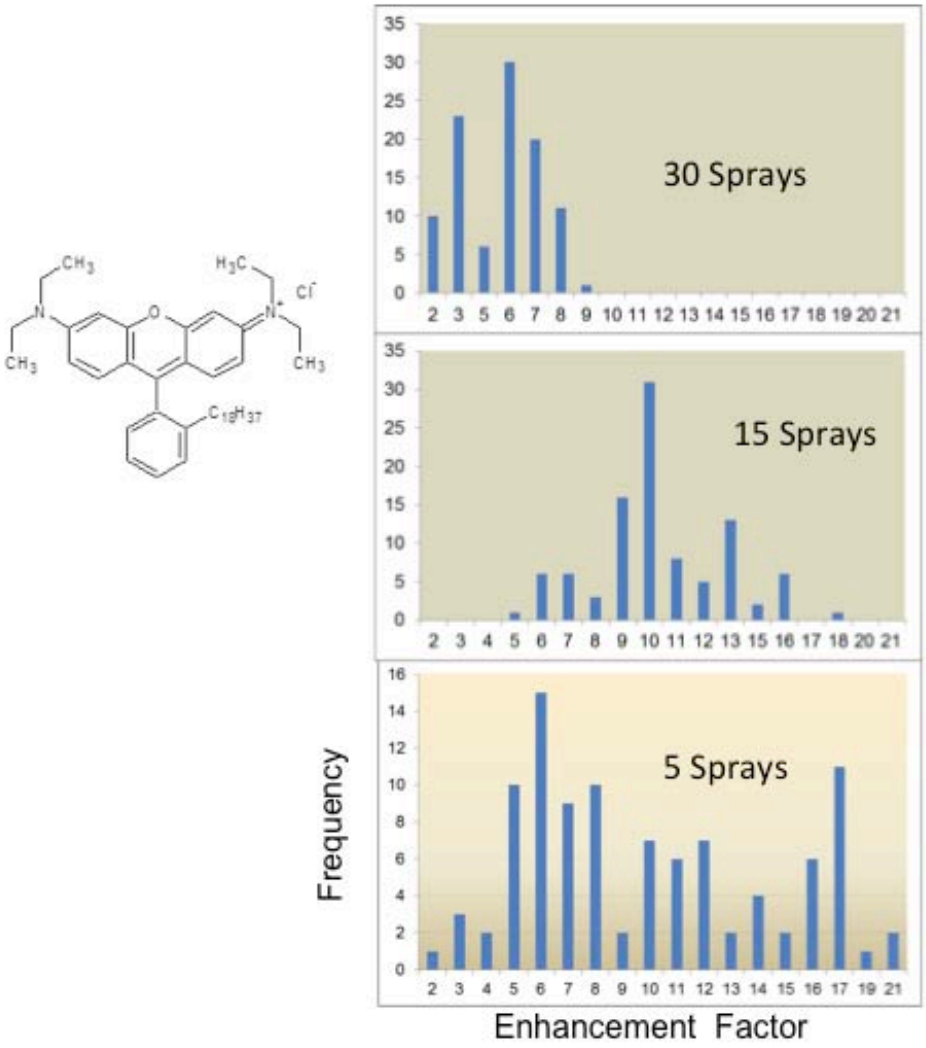
Figure S2

S2. The aggregating effect of the NaCl electrolyte on the absorption spectrum of CV in solution. Decrease in monomer absorption is evident with increase in electrolyte concentration (0.02M to 0.08M of NaCl).

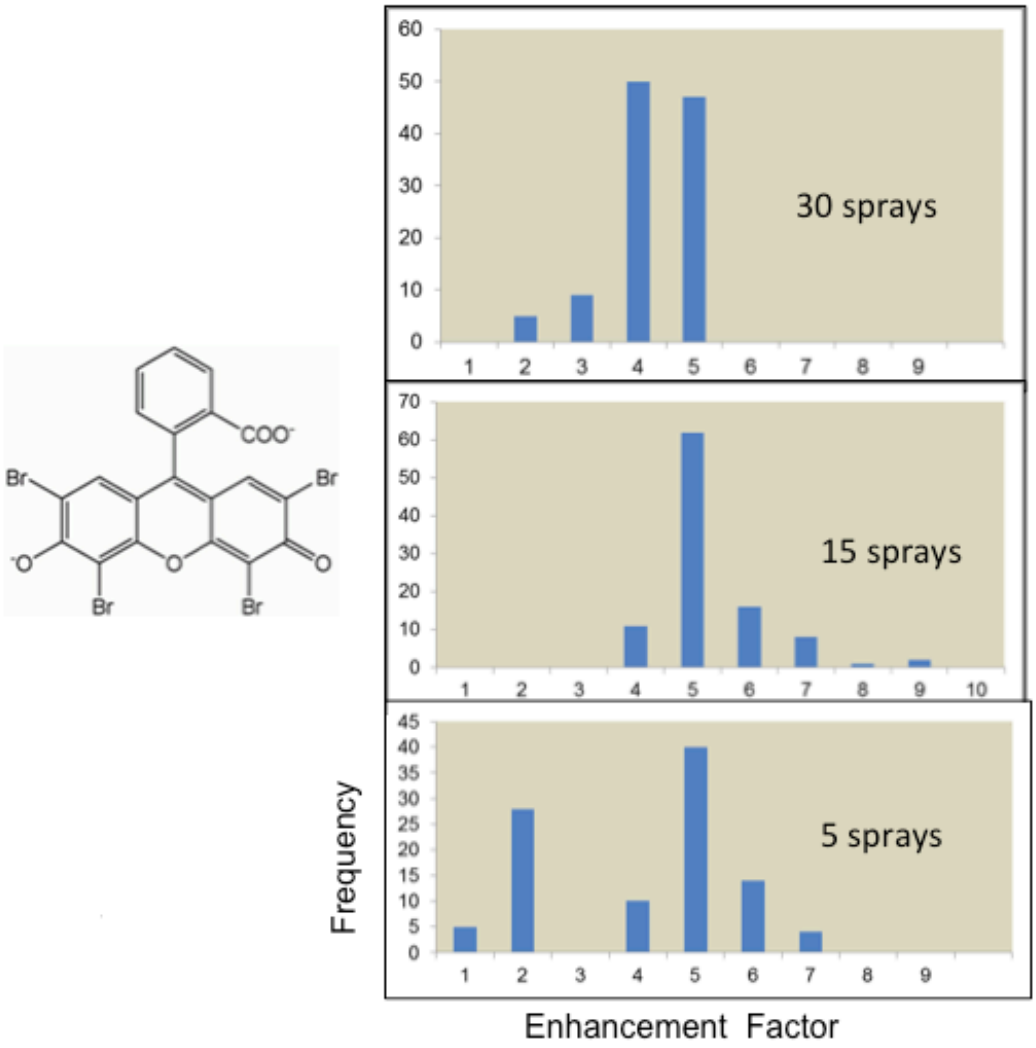


S3. The airbrush-spray deposition setup is shown together with the optimization study of parameters, sample distance and working pressure, for the airbrush-spray.

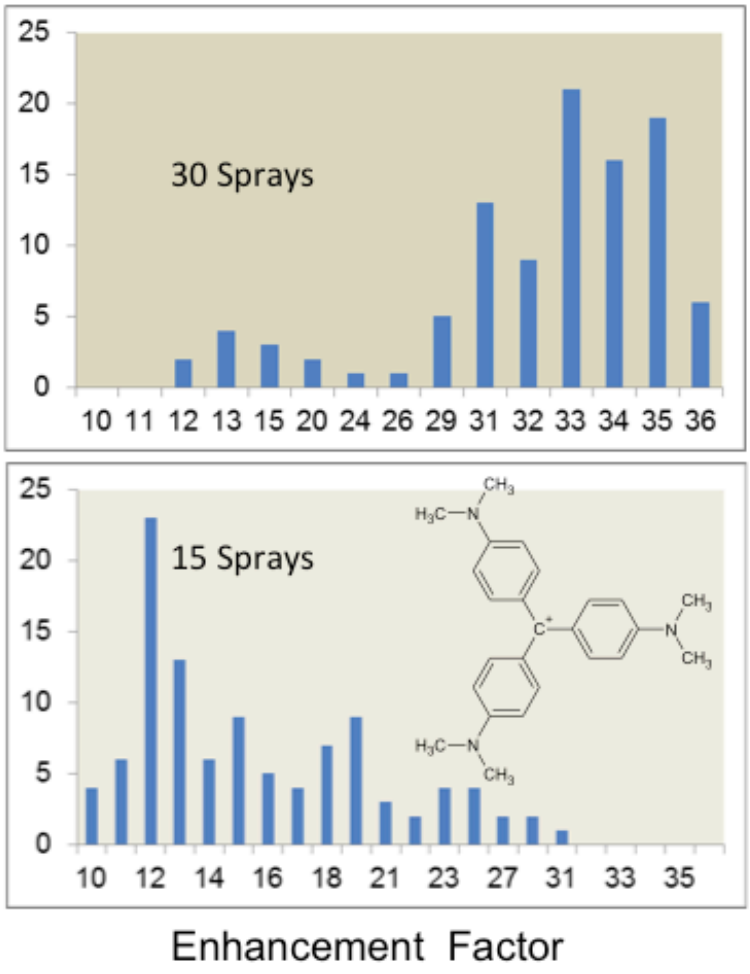
S4. Enhancement factor (EF) histogram (from 100 spectra) for a LB sample of R18-AA (1:100) with 5, 15 and 30 sprays.



S5. Enhancement factor (EF) histogram (from 100 spectra) for an LbL assembly (MADQUAT/Eosin-Y) with 5, 15 and 30 sprays.



S6. Enhancement factor (EF) histogram (from 100 spectra) for an LbL assembly (PAA/Crystal Violet) with 15 and 30 sprays.



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