SUPPLEMENTARY ELECTRONIC INFORMATION

Confined Gold Nanoparticles Enhance the Detection of Small Molecules in Label-Free Impedance Aptasensors

A. S. Peinetti,[a] Helena Ceretti, [b] M. Mizrahi,[c] G. A. González,[a] S. A. Ramírez,[b] F. Requejo,[c] J. M. Montserrat,[b,*] F. Battaglini[a,*]

X ray techniques. Structural parameters, such as coordination numbers (N), bond lengths (R) and their mean squared disorders (σ^2) were obtained by a nonlinear least squares fit of the theoretical EXAFS signal to the data in R space by Fourier transforming both the theory and the data. Theoretical scattering path amplitudes and phase shifts for all paths used in the fits were calculated using the FEFF6 code.[S1] The k range was set from 2 to 11.5 $Å^{-1}$ and the Fourier transform was fitted between 1.5 to 3.3 Å. The passive reduction factor $S0^2$ obtained was 0.88. That value was calculated by fitting of metallic Au foils standards by constraining the coordination number in these compounds of known crystalline structure.

	L_3-Au						
Sample	N_{Au-Au}	R_{Au-Au}(Å)	σ^2_{Au-Au}(Å^2)	N_{Au-S}	R_{Au-S}(Å)	σ^2_{Au-S}(Å^2)	Diameter (nm)
Metallic Au	12	2.880(2)	0.0082(3)	-	-	-	-
Al/Al_2O_3/AuNP	9.7(6)	2.863(4)	0.0082(6)	-	-	-	2.2(5)
Al/Al_2O_3/AuNP/SR	9.8(8)	2.836(5)	0.0075(6)	0.22(8)	2.340(5)	0.003(1)	2.3(7)

Table S1. Fitted values from EXAFS signal for the average coordination number (N), interatomic distance (R) and Debye-Waller factor (σ^2), for the first coordination shell around Au atoms, together with the estimated diameter for the samples. The coordination number was fixed at 12 for metallic Au.

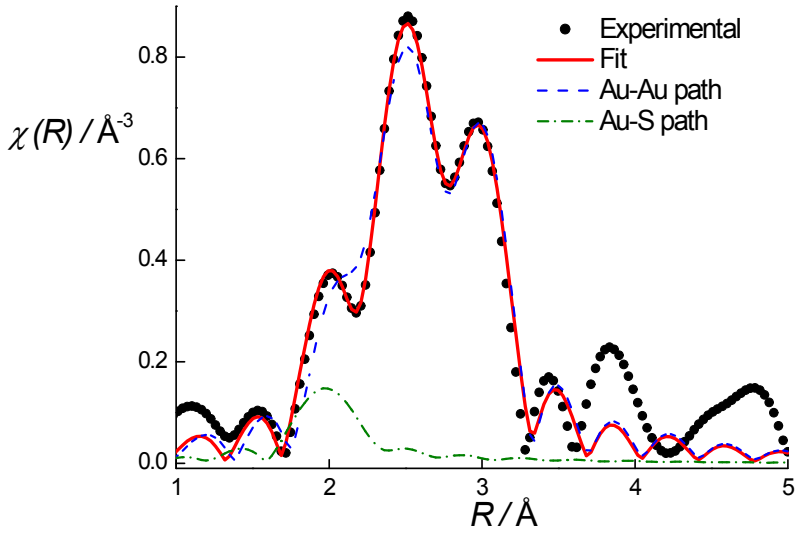

Figure S1. Fourier transform of the EXAFS oscillation (solid circles) and fit of the Al/Al_2O_3/AuNP/SR sample (red line). Dashed blue line and dashed-dot green line indicate the Au-Au and Au-S contributions, respectively.

References

[S1] S.I. Zabinski, J.J. Rehr, A. Ankudinov ,R.C. Albers, M.J. Eller, *Phys. Rev. B* **1995**, *52*, 2995e3009.