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## A glance at biological events through the prism of gold and silver nanoparticles

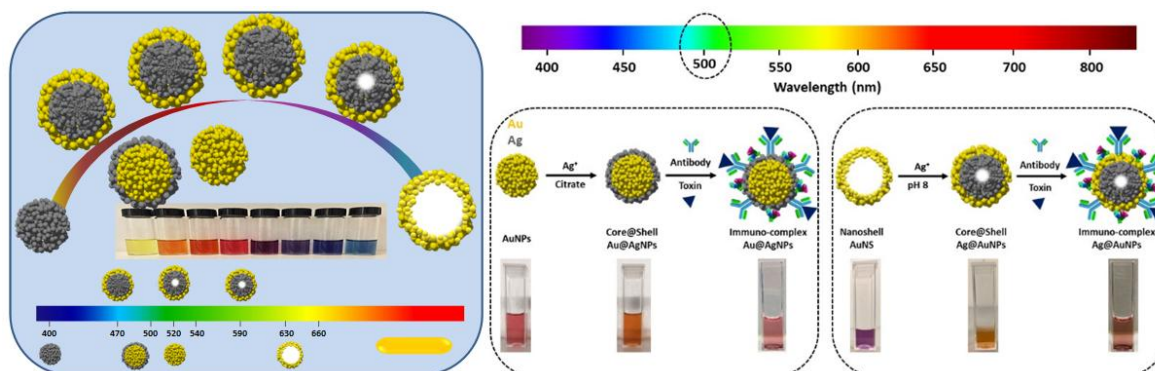
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Metallic nanoparticles have attracted increasing interest for fundamental chemistry and for the engineering of novel functional materials capable of responding to events occurring at the bioInterfaces. The nanoscale entirely reshapes the properties of noble metal nanomaterials and one of the main consequences is their unique optical properties induced by the localized surface plasmon resonance (LSPR) phenomenon. This feature can be exploited in various ways to monitor biological events either in imaging, theranostic or molecular recognition events when a biosensor is operating.

In our group we use many of the features of gold and silver nanoparticles to transducer the signal when biosensing a large variety of targets, in particular, the LSPR band position and shift, the aggregation/dispersion balance, and the high extinction coefficient allowing for NP detection at very low concentrations. Several scenarios allowing for color change and naked-eye detection are explored and we tune the chemical composition, including through nanoconfined reactions with metallic nanoshells to achieve responsive bioconjugates NP-Ab capable of reporting biological events without any sophisticated equipment or advanced skills.



### References

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#### **About the speaker**

Souhir Boujday is Professor at the department of Chemistry, Sorbonne University (formerly University Pierre & Marie Curie (Paris 6)) at the Laboratory of Surface Reactivity, UMR CNRS-UPMC 7197. She's heading the research axis **NanoBioSurf: NanoMaterials & Surfaces @ BioInterfaces**. She received Ph.D degree in 2002 on the interfacial molecular recognition between transition metal complexes and silica surface during catalysts preparation. In 2004, she joined the Laboratory of Surface Reactivity. She was involved in the creation of a new research group on BioInterfaces where she was responsible of the Biosensors thematic. Her research activity in the biosensors' field is focused on the optimization of the sensing layer studied with a molecular approach and the use of gold nanoparticles for an enhanced sensitivity. In 2012, she defended her Habilitation in research supervision entitled "NanoArchitectures and molecular recognition at the solid/liquid Interface". In 2014, she was awarded the Tan Chin Tuan Exchange Fellowship in Engineering in Nanyang Technological University (NTU) Singapore. Souhir Boujday spent two years as visiting Professor at NTU collaborating with three groups from the School of Material Science and Engineering (MSE), the Centre for Biomimetic Sensor Science (CBSS), and Nanyang Environment & Water Research Institute (NEWRI).

The research interest of S. Boujday is focused on a molecular approach of surface chemistry at the solid/liquid interface for biosensors and catalysis applications with the following key-words: Surface chemistry, Self-assembly, Alkylthiols on gold substrates, Silanes on silica or silica-like surfaces, Biosensors, Protein adsorption on surfaces, Molecular recognition at the solid/liquid Interface, Metallic nanoparticles, Plasmonic, Chemical nanostructuration of surfaces, Heterogeneous catalysts preparation.

Techniques: IR (PM-IRRAS, ATR, DRIFT) – QCM-D - SPR - XPS – Raman – SERS – AFM - MEB/MET

Web page: [www.lrs.upmc.fr/en/nanosurf-nanomaterials-surfaces-biointerfaces.html](http://www.lrs.upmc.fr/en/nanosurf-nanomaterials-surfaces-biointerfaces.html)