

# Séminaire de Chimie Autour des Nanosciences

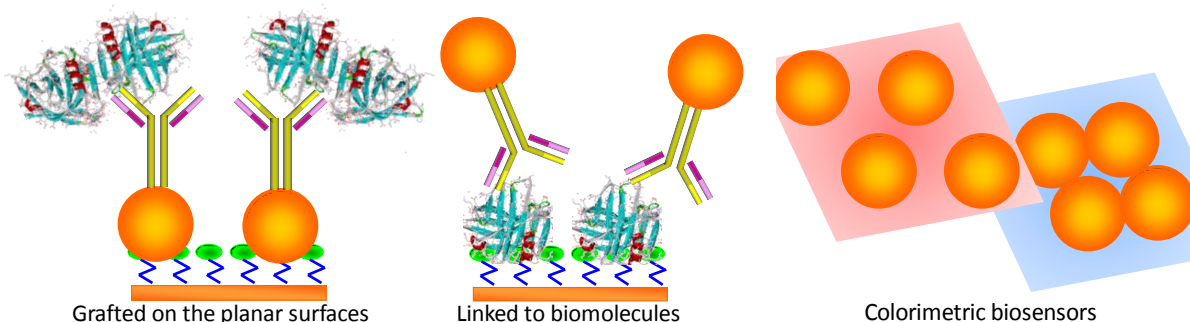
## SOUHIR BOUJDAY

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### **GOLD NANOPARTICLES FOR BIOSENSORS**

Biosensors are analytical devices incorporating a biological material associated with a physicochemical transducer. These devices enable rapid and fast monitoring of specific targets in numerous media among them body fluids, environmental matrixes, and food. The use of gold nanoparticles (AuNPs) in biosensors, either as transducers or as nanostructuring agents, has expanded during the last decade; the unique optical properties of AuNPs associated to their biocompatibility, ease of preparation, and cheap cost, make them indeed optimal candidates for signal transduction and/or enhancement.

We use gold nanoparticles to generate nanostructured substrates on planar surfaces and to read the molecular recognition phenomena by color change. The first strategy requires mastering the assembly of gold nanoparticles on surfaces which is not a trivial task as the application necessitates a perfect control of coverage, dispersion and stability. We therefore explore the parameters governing the mechanism of assembly on Gold and Silicon substrates with a special focus on the nature of the terminal chemical function, the surface charge, the flexibility of the organic layer, and the protocol of deposition. Our optimizations allow us to adapt the final nanostructured substrates to the applications needs. In the second strategy, the modification of the environment of AuNPs by target adsorption leads to a color change, which in extreme cases can generate a color change from red to blue making the molecular recognition detectable by naked eyes. Finally, we combine surface chemistry and nanoparticles color change to detect the presence of toxin in complex media.



**LE VENDREDI 28 Octobre À 11H00**  
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