# Spectroscopic study of plasmon-induced photopolymerization

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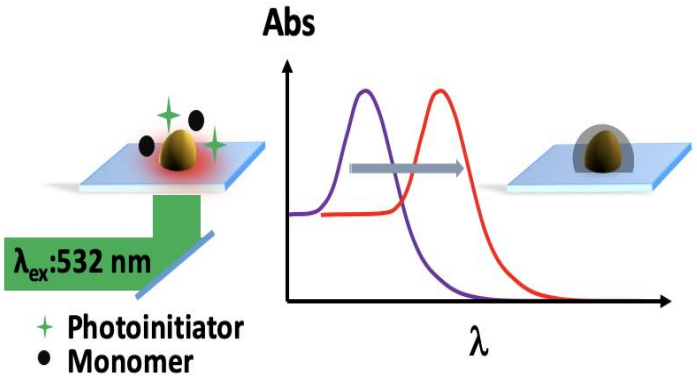
**ABSTRACT:**

The dielectric function of metallic nanoparticles depends mainly on their surrounding environment. A small variation of the medium refractive index due to chemical or physical interaction induces a shift in the plasmonic band of the NPs (LSPR). In this context, we used gold nanoparticles (AuNPs) prepared by thermal dewetting of an Au thin film as nanoprobes to follow the photopolymerization at the surface of AuNPs by means of a fiber UV-vis spectrometer. To show the interest of this approach, two configurations were used: resonant and non-resonant excitation between the photopolymer and the AuNPs were investigated. We have shown that these AuNPs not only allowed the monitoring of the induced photopolymerization at the nanoscale, but also to highlight the near field coupling effect responsible for the acceleration of the photoinduced reactions.
This methodology seems very interesting to study the photoinduced nanofabrication processes of metal/polymer hybrid nanoparticles, and more globally to study the photopolymerization reactions at the nanoscale.




**References**
1- Khitous, Amine, et al. ACS Applied Nano Materials 4.9 (2021): 8770-8780.