Nanostructured metallic surfaces support surface plasmon (SP) excitations. The resonance conditions depend on the optical properties at the metal-dielectric interface. For instance, the monitoring of the shift of the surface plasmon resonance (SPR) due to molecular adsorption events is a well-established approach in biosensing. The SPR condition also leads to an increase in the electric field at the surface which can be explored for enhanced spectroscopy schemes, such as surface-enhanced Raman scattering (SERS). In this presentation, I will provide an overview of the recent advances from our group on the fabrication of metallic nanostructures, and discuss some of their applications. These will include the use of gold nanostructures as nano-electrodes for spectroelectrochemistry, the integration of nanostructures in microfluidics and fiber optics for biomedical applications and the concept of plasmonic solar cells.