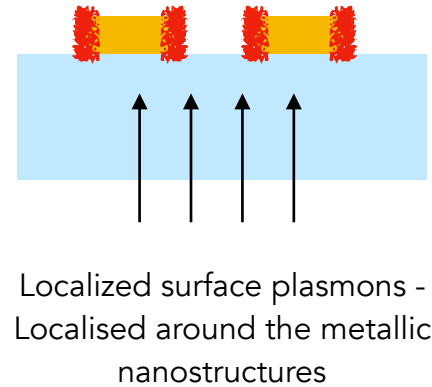
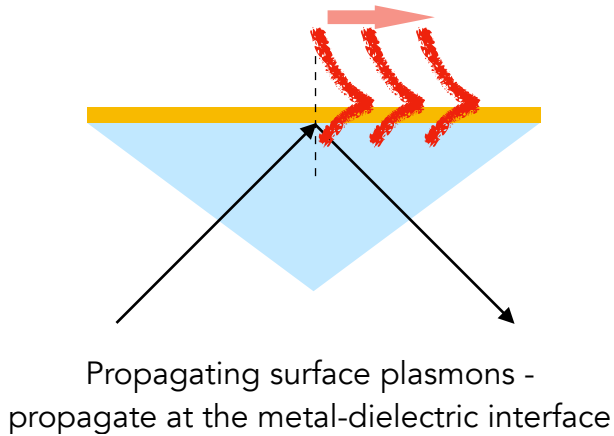


# What is Plasmonics?

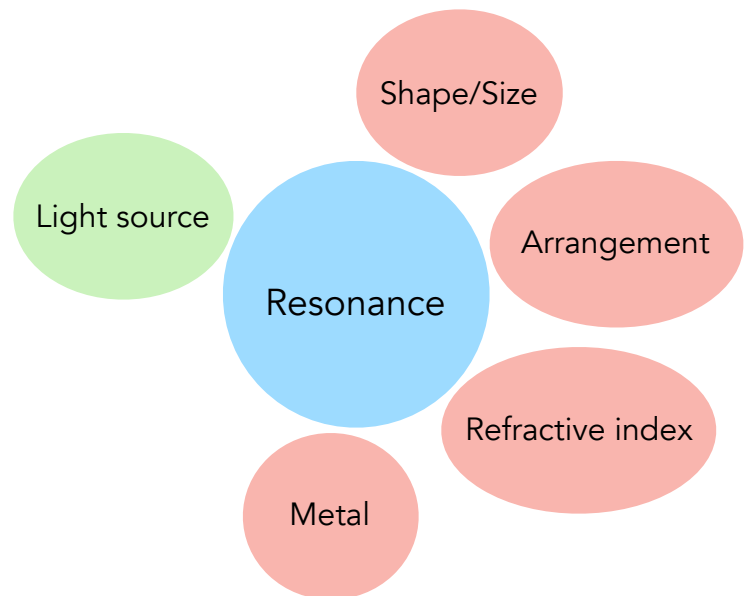
Plasmonics deals with the interaction of electromagnetic fields (i.e. light) with metallic structures. Typically, these metallic structures possess sub-wavelength dimensions and support the so-called surface plasmon resonances (SPR). These resonances occur due to the collective coherent oscillations of the free electrons present in the metal. SPR resonances are supported by thin metal films (propagating surface plasmons) or by metallic nano-structures (localised surface plasmons).



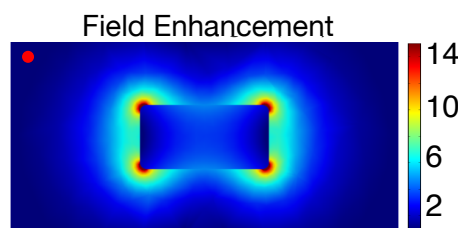
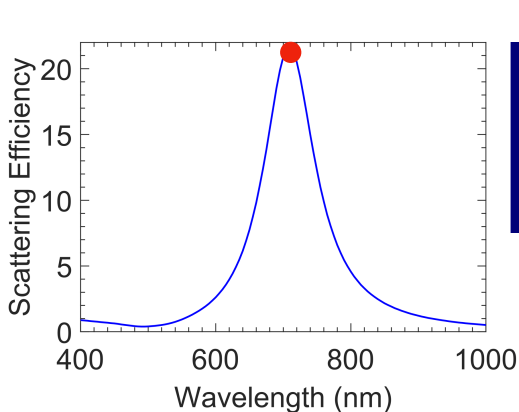
# Plasmon resonance tuning

The plasmon resonance can be tuned by adjusting various parameters:

- Size & shape
- Arrangement of nanostructures
- Refractive index of surrounding
- Metal used (Au, Ag, Cu are most commonly used metals)
- Incident light source



# Hotspots - Enhanced electromagnetic (EM) fields



At resonance, the electromagnetic field near the plasmonic structure is enhanced significantly. The enhancement in the EM field can be used for enhancing

various optical phenomena at the nanoscale like molecular scattering and non-linear signal generation.