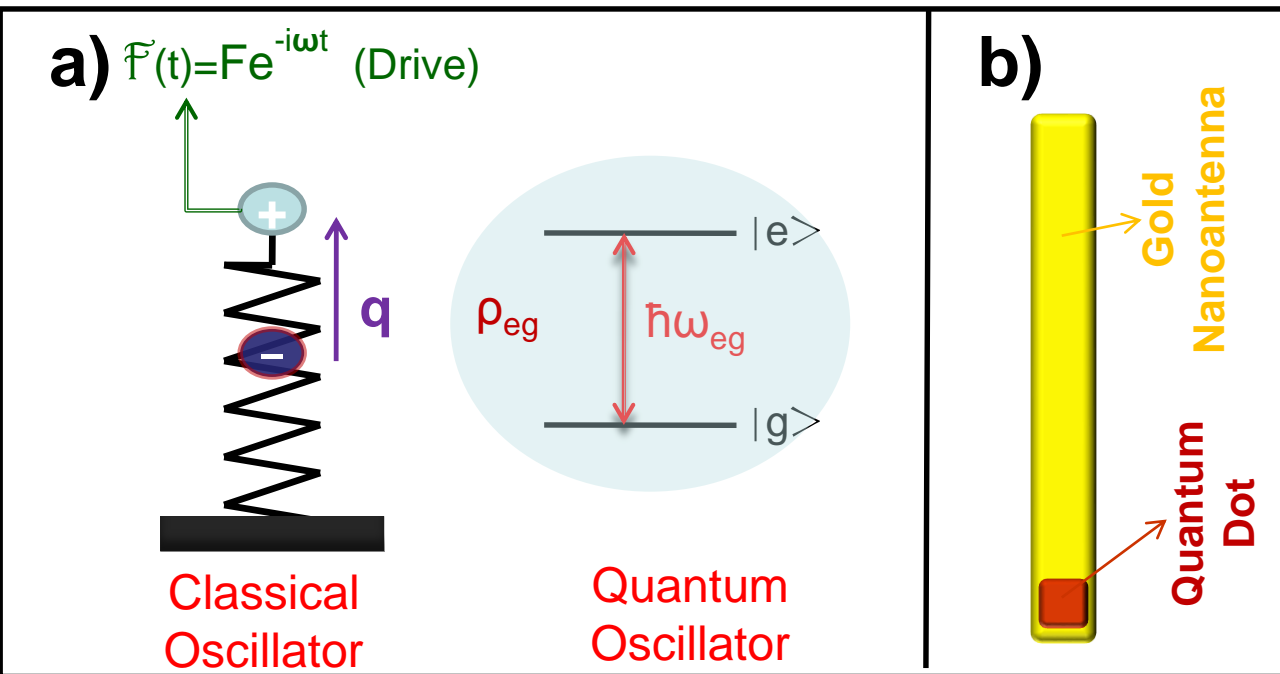


# Metal nanoparticle plasmons operating within quantum lifetime [1]



quantum dot  
interacts with  
plasmon-polariton polarization field  
of  
gold nanoparticle

## Decay Rates:

$\gamma_{MNP} = 10^{14}$  Hz ← Metal Nanoparticle →

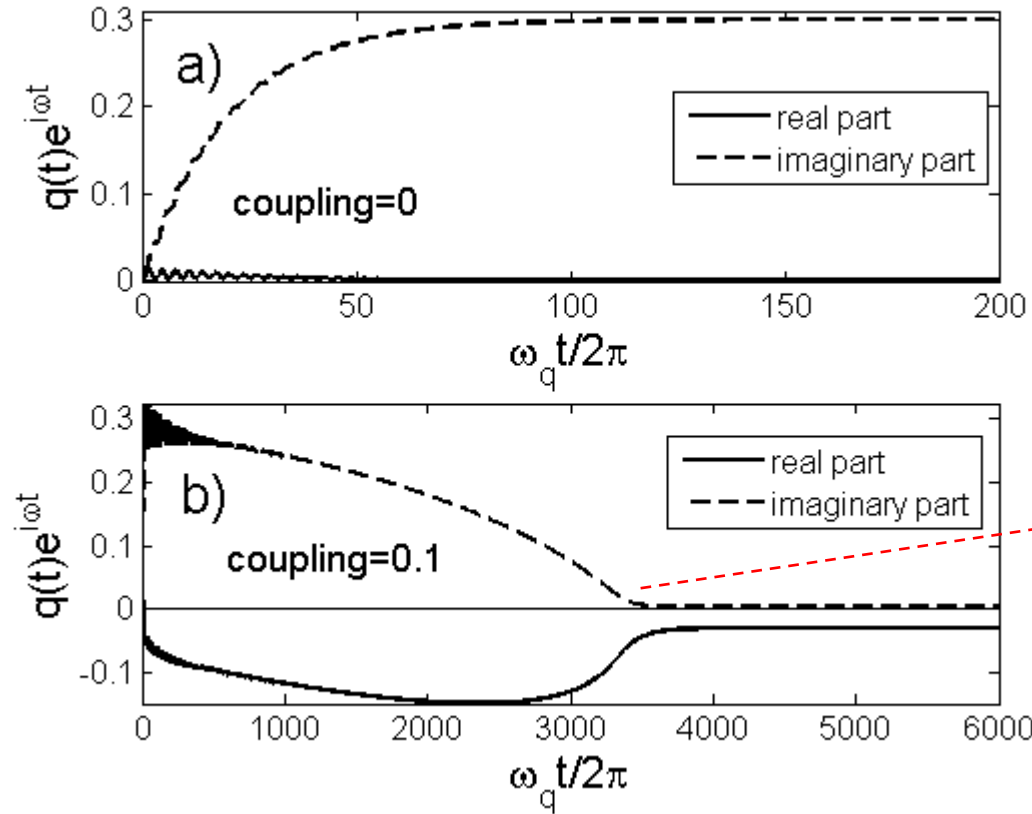
$\gamma_{eg} = 10^{12}$  Hz ← Dye Molecule

$\gamma_{eg} = 10^9$  Hz ← Quantum Dot

Interacts  
resonantly  
with incident light

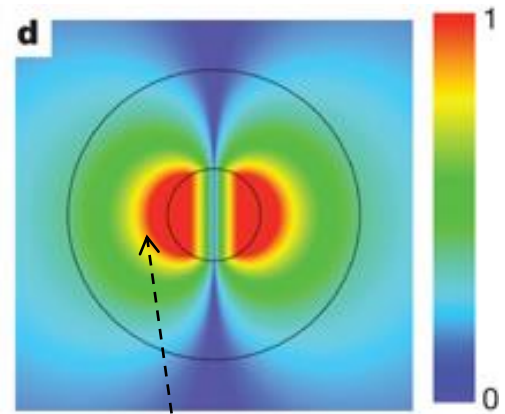
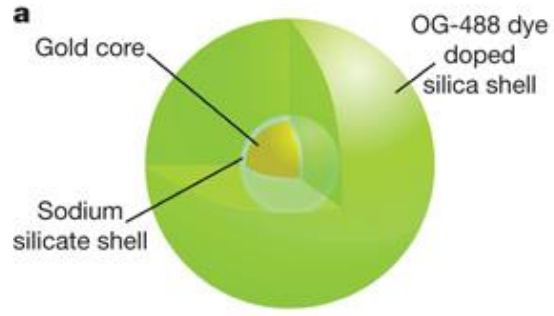
[1] M. Emre Taşgın, *Nanoscale* **5**, 8616 (2013).

# Metal nanoparticle plasmons operating within quantum lifetime [1]

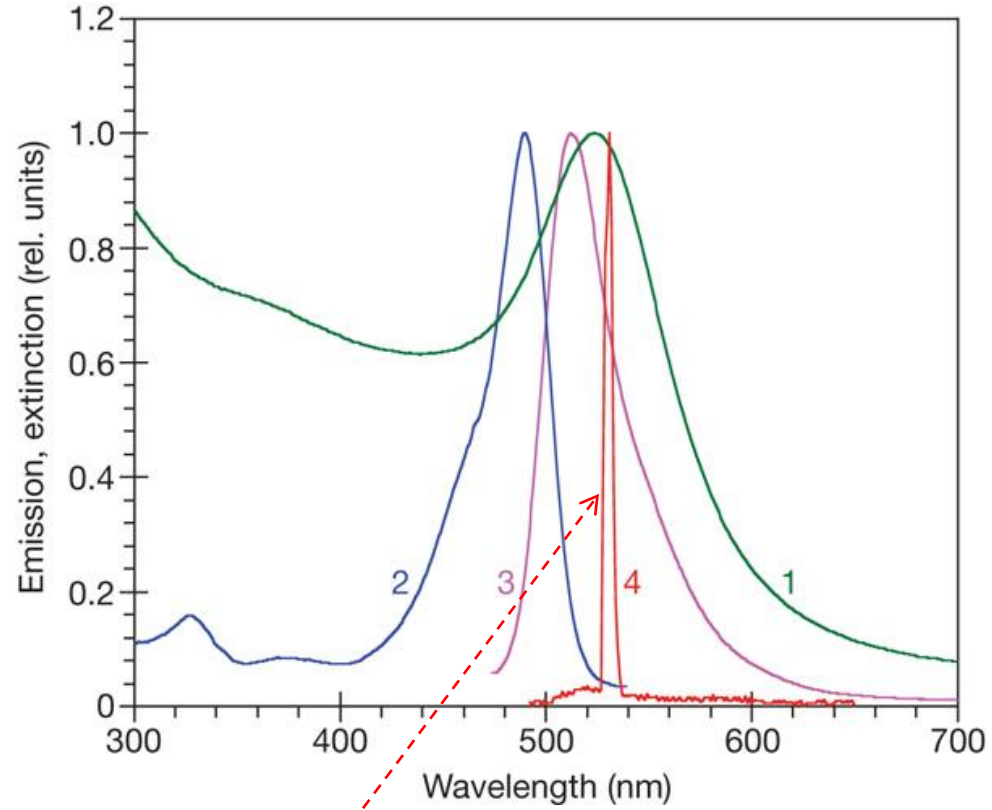


Lifetime  
extends

# Metal nanoparticle plasmons operating within quantum lifetime



MNP interact with molecules



explains

Narrowing in emission band [2]

[1] M. Emre Taşgin, *Nanoscale* **5**, 8616 (2013).

[2] Noginov *et al.*, *Nature* **460**, 1110 (2009).