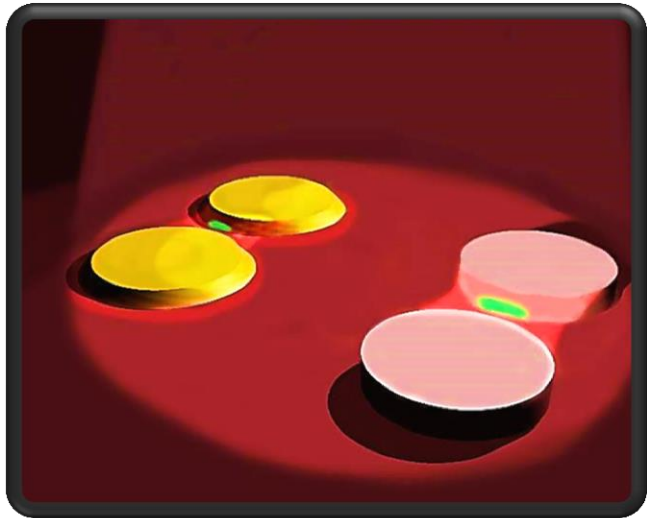




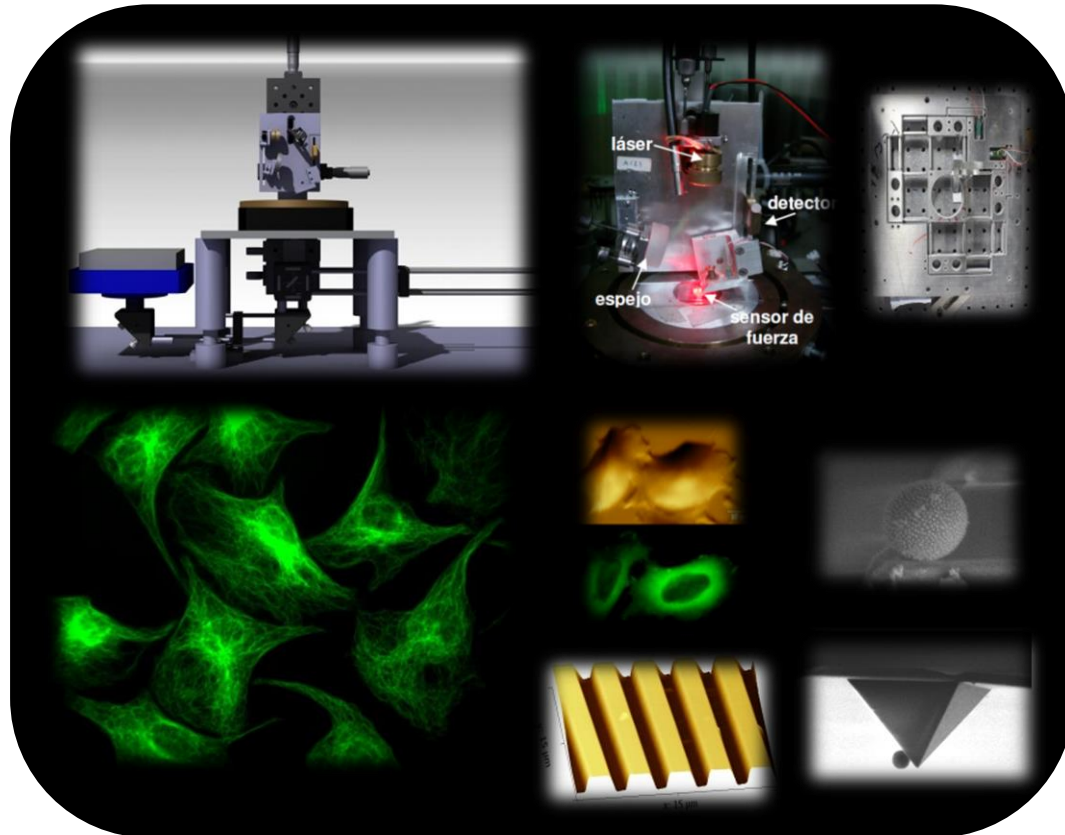
NANOANTENAS NO PLASMÓNICAS CON ULTRABAJA CONVERSIÓN A CALOR



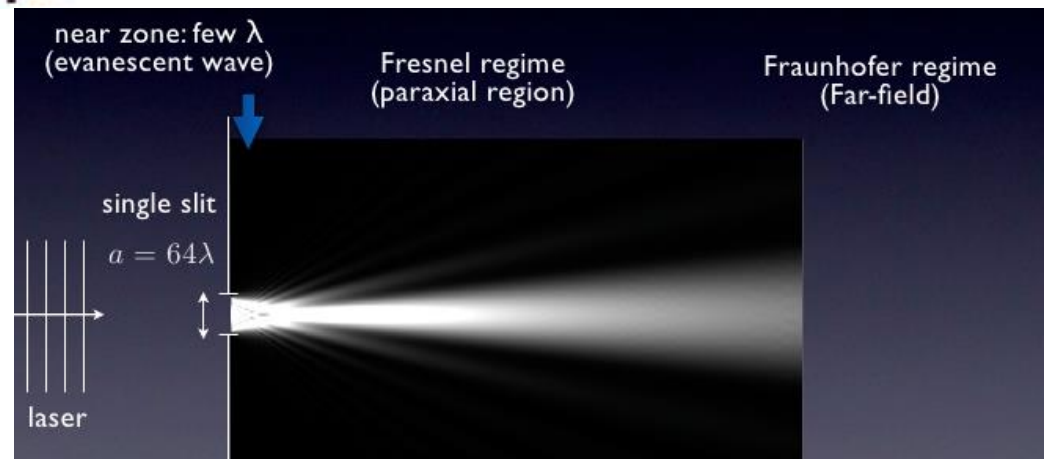
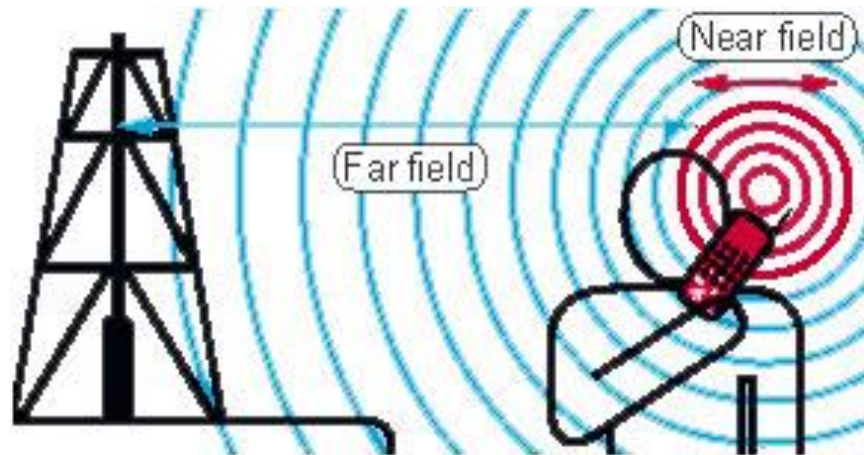
Andrea Bragas

Laboratorio de Electrónica Cuántica (LEC)
Departamento de Física – Exactas - UBA
www.lec.df.uba.ar

Martin Caldarola - Gustavo Grinblat

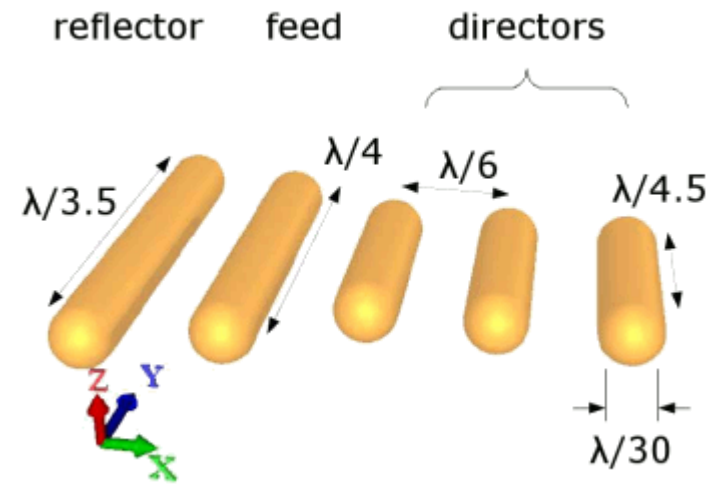


Campo cercano y lejano

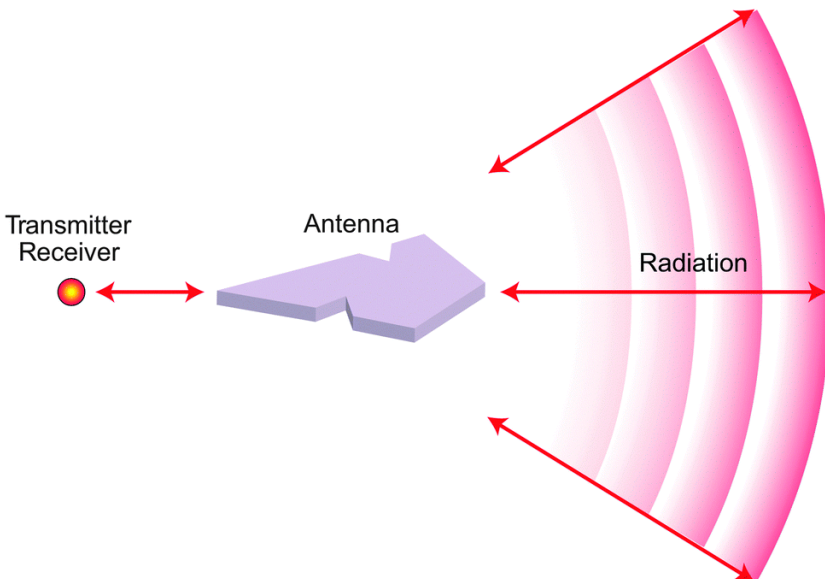




Antenna es algo que se estira o se extiende algo "tensil"



Antena Yagi-Uda óptica 400nm x 400nm



Antenas - "driving force"

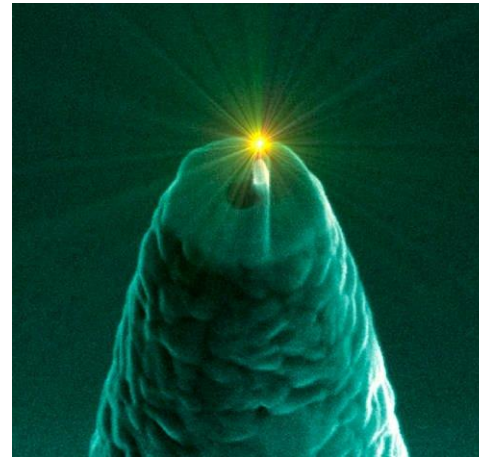


Radio

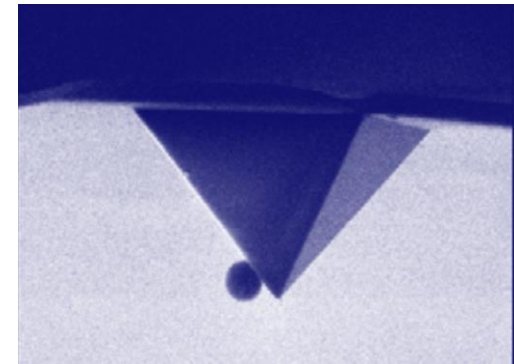


Comunicaciones

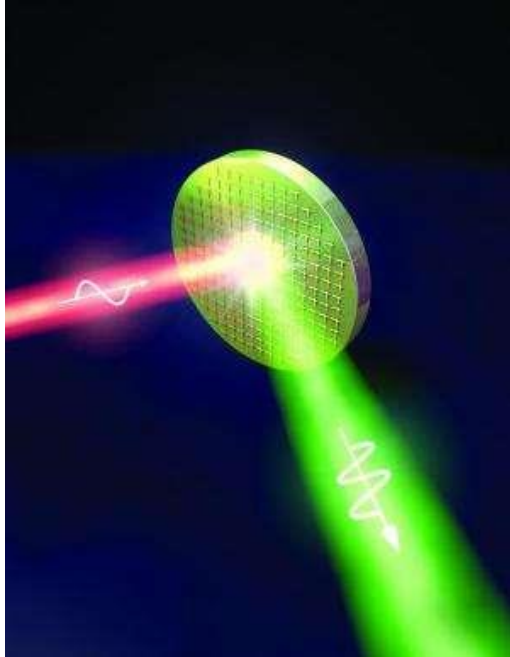
Ópticas



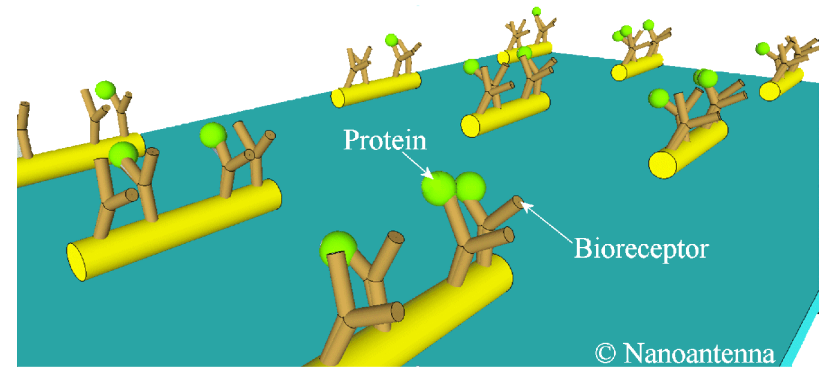
Van Hulst group



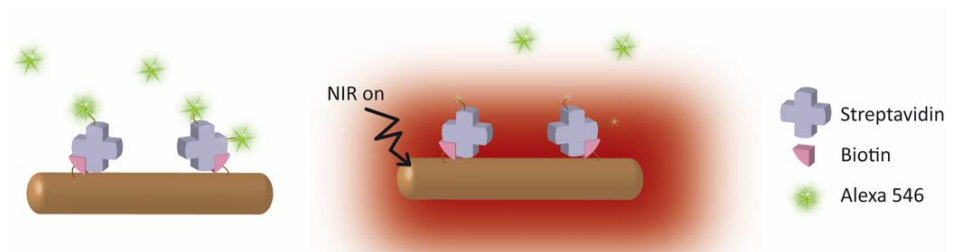
Microscopías



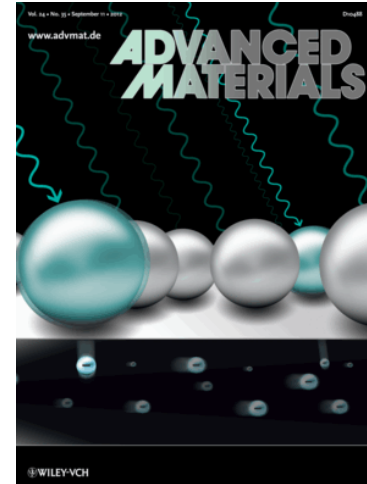
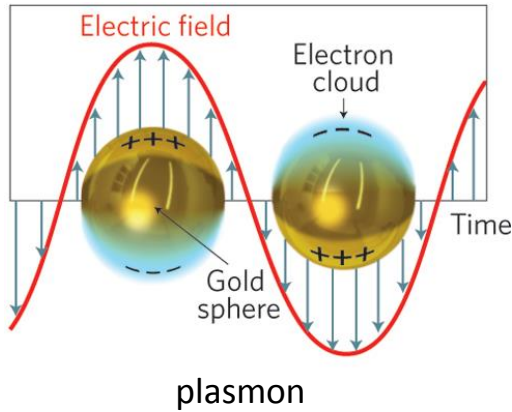
Tymchenko et al, *Nature*, vol. 511, pp. 65–69, 2014.



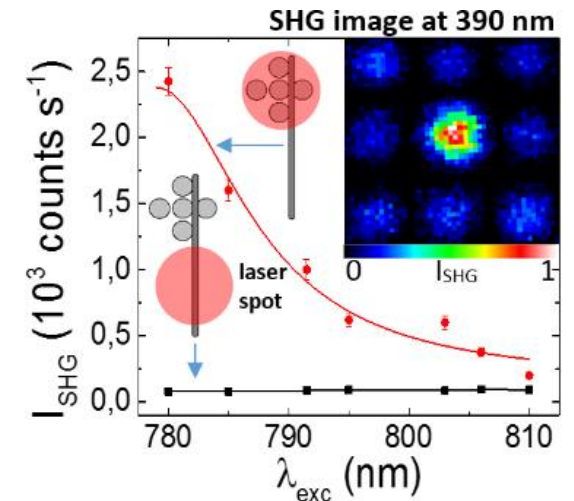
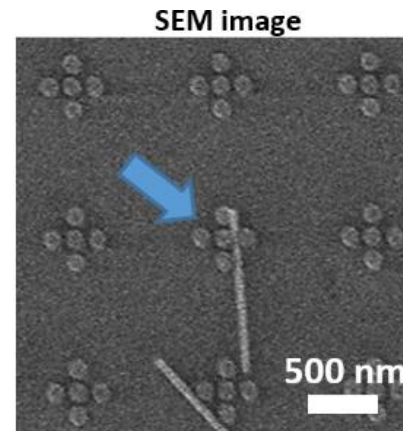
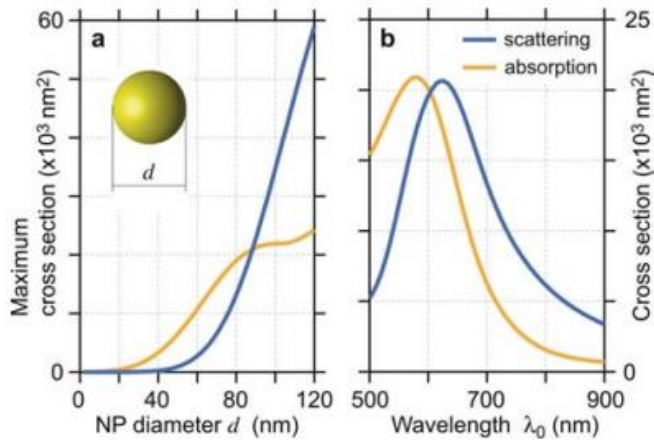
Stefani y Pellegrotti - Premio Innovar 2014



Nanoantenas metálicas

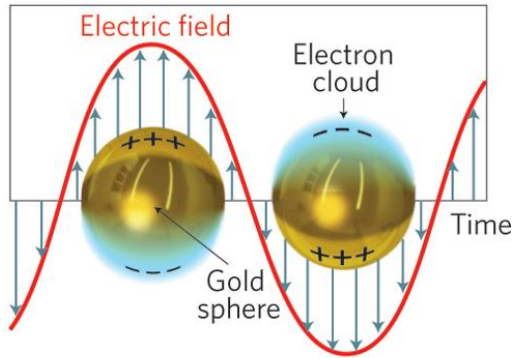


Celda solar plasmónica
 Reineck et al, *Adv Mater* 35, 4729, 2012.

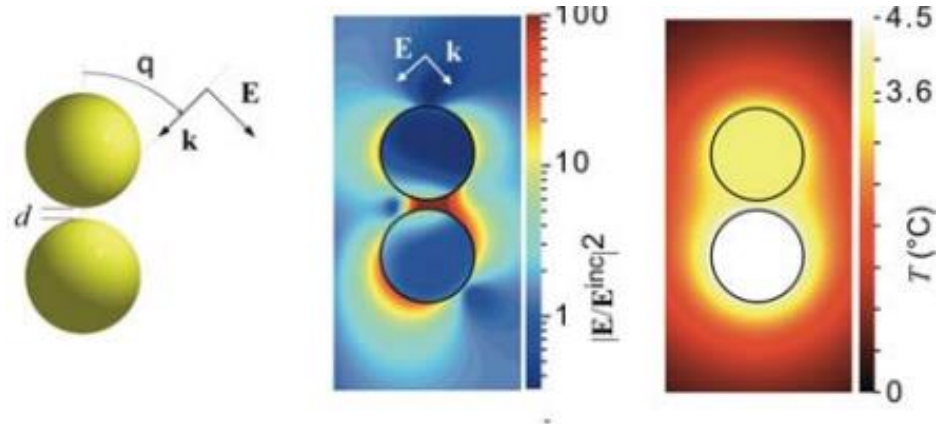
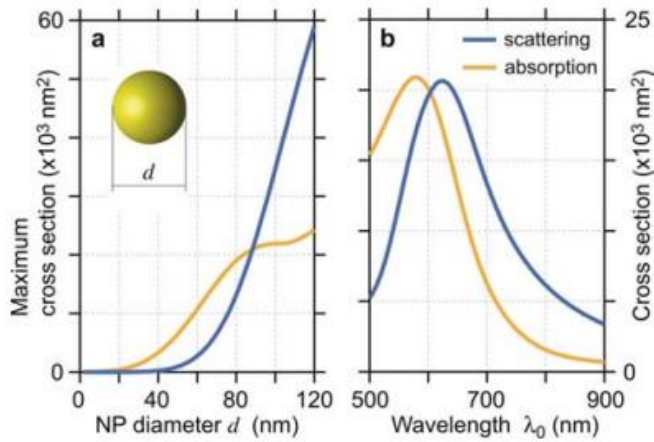


Grinblat et al, Nano Letters 14(11) 6660–6665, 2014.

Nanoantenas metálicas

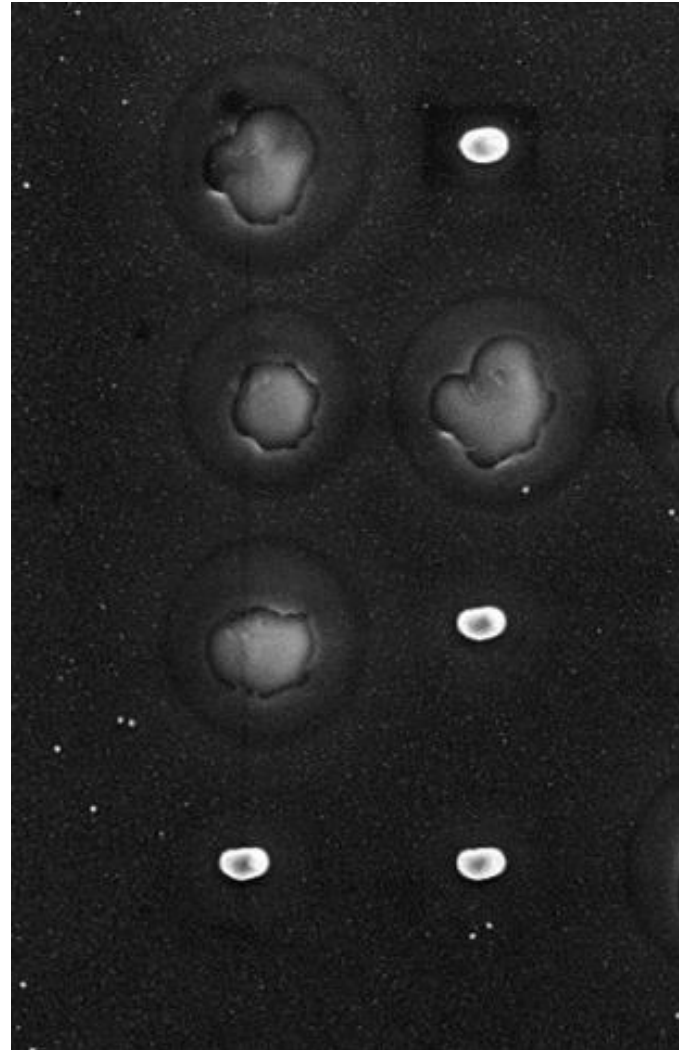
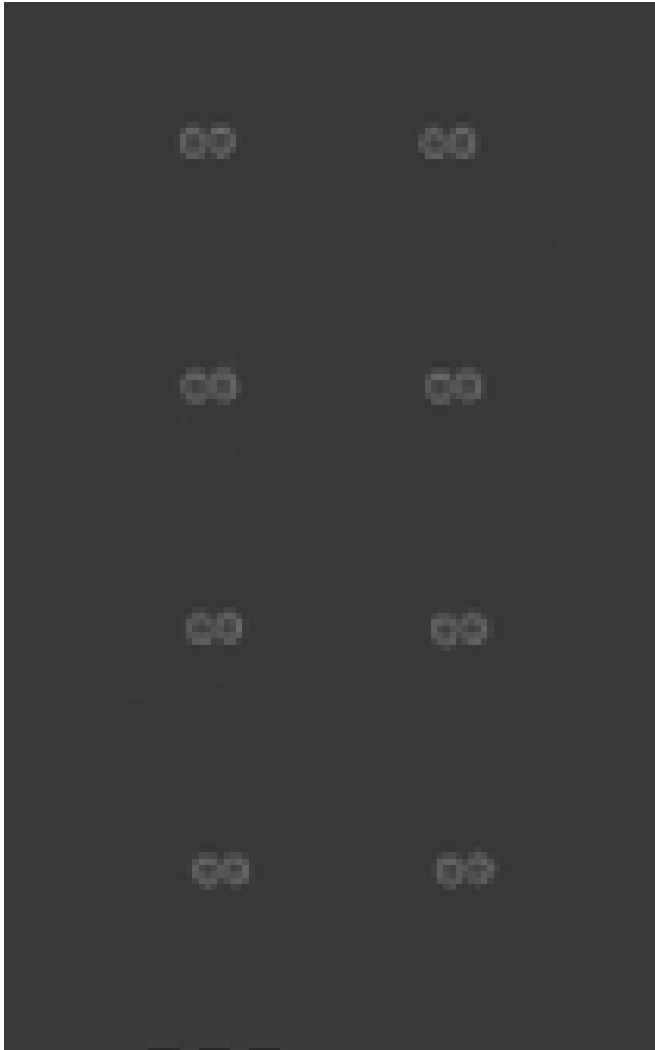
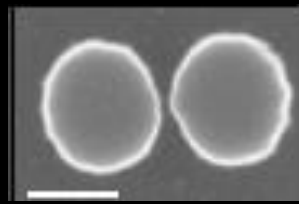


plasmon



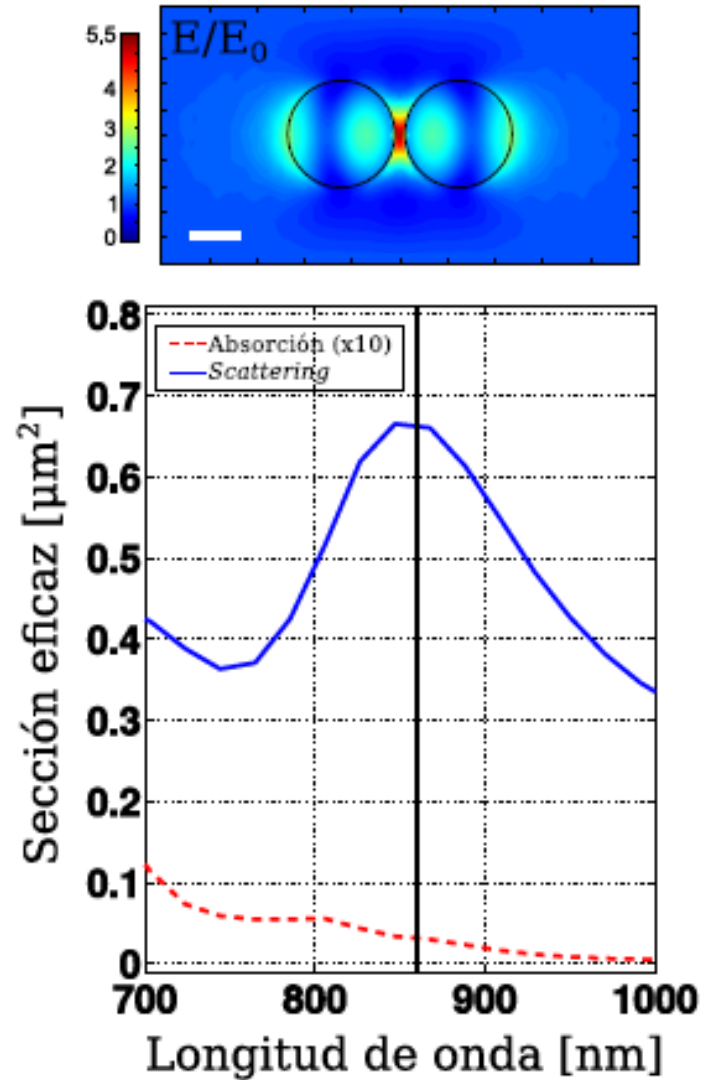
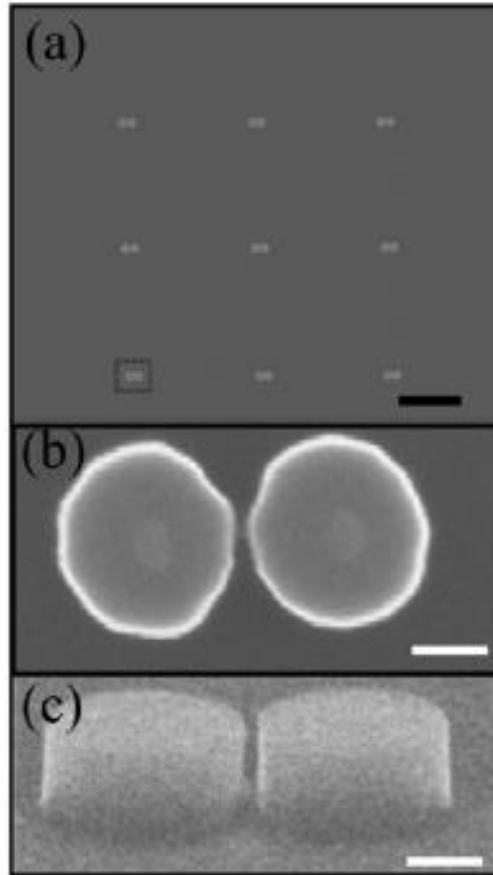
Nanoantenas metálicas

Dímeros de discos de oro

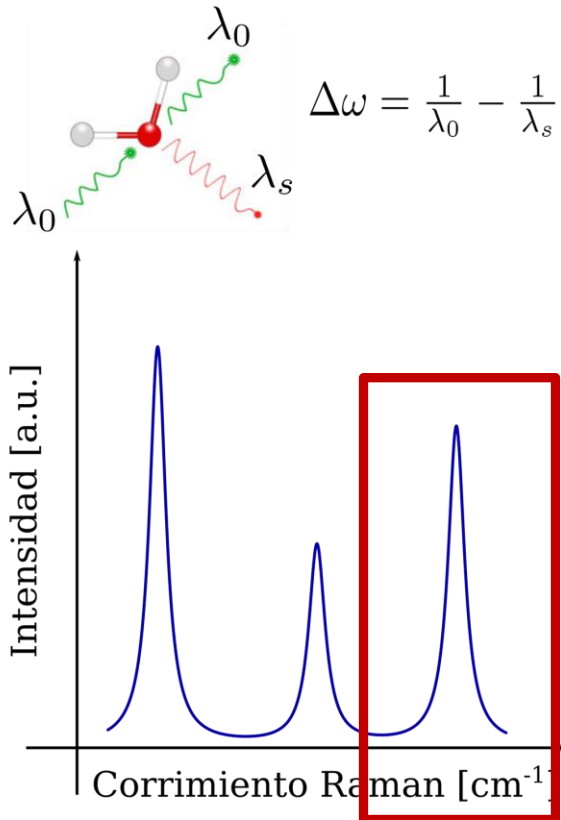
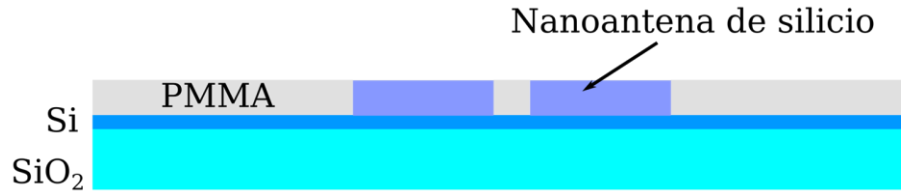


Nanoantenas de silicio

Dímeros de disco



Nanoantenas de silicio Raman



- Huella digital
- Baja sección eficaz

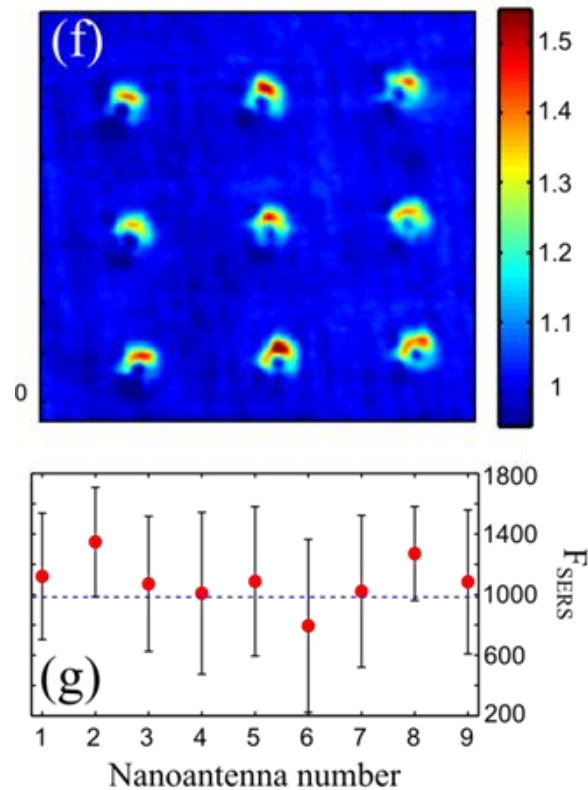
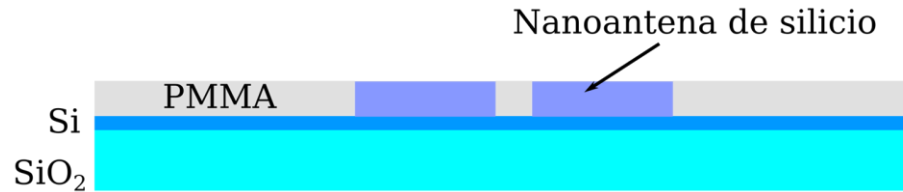


Intensificación

$$F \propto \left(\frac{E}{E_0} \right)^4$$

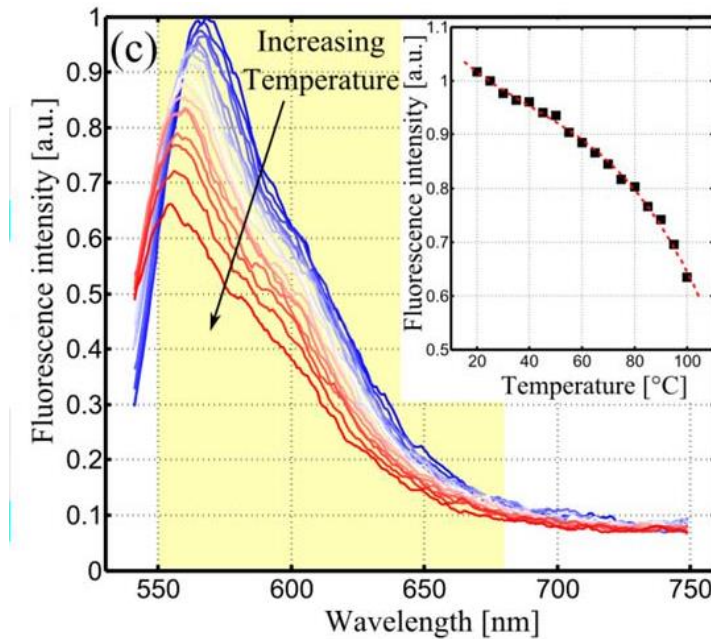
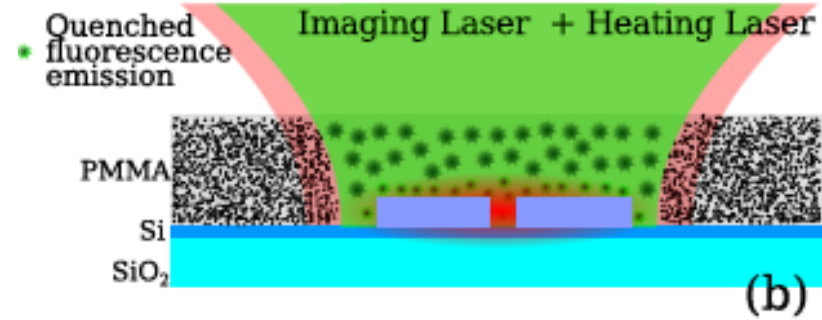
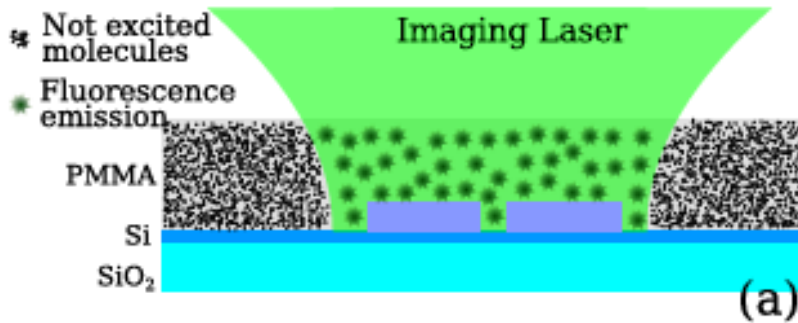
Nanoantenas de silicio

SERS

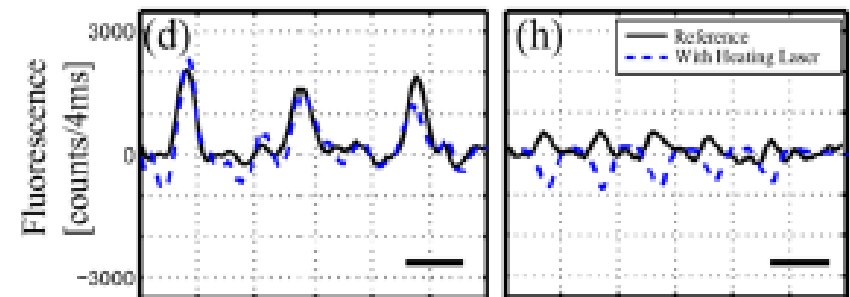
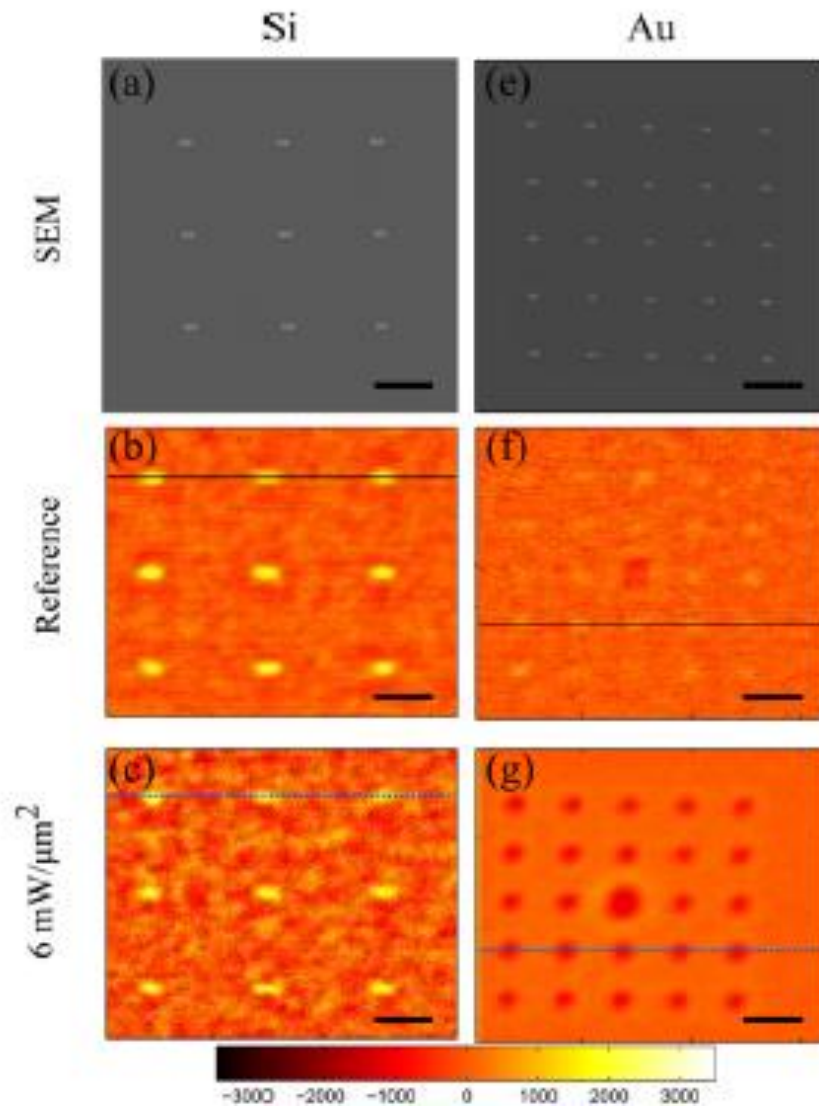


Medición de temperatura

Termometría molecular

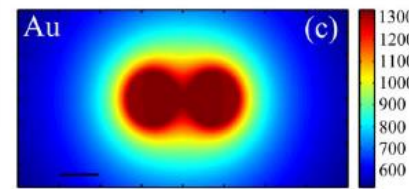
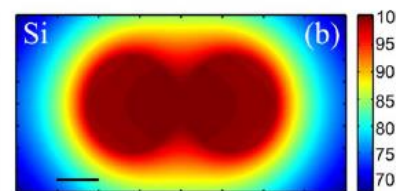
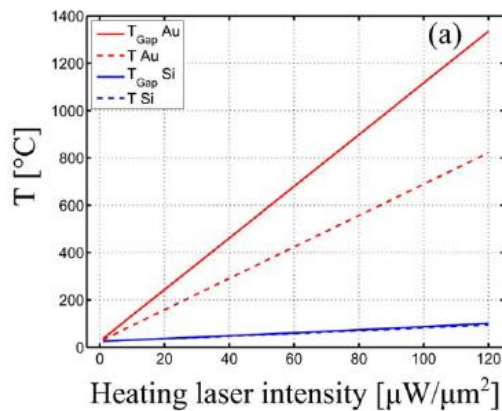
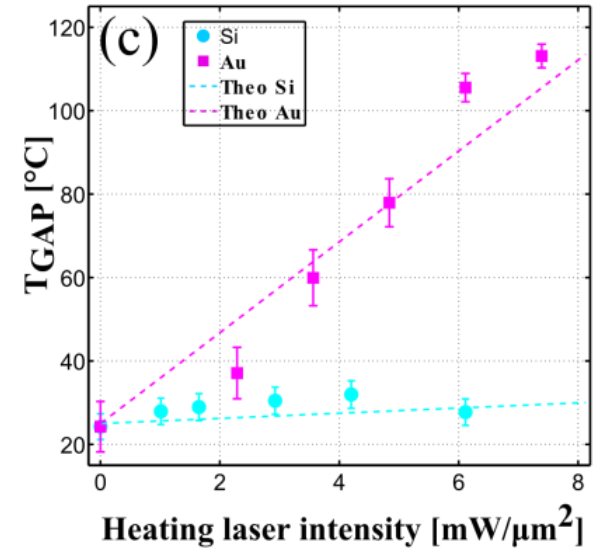
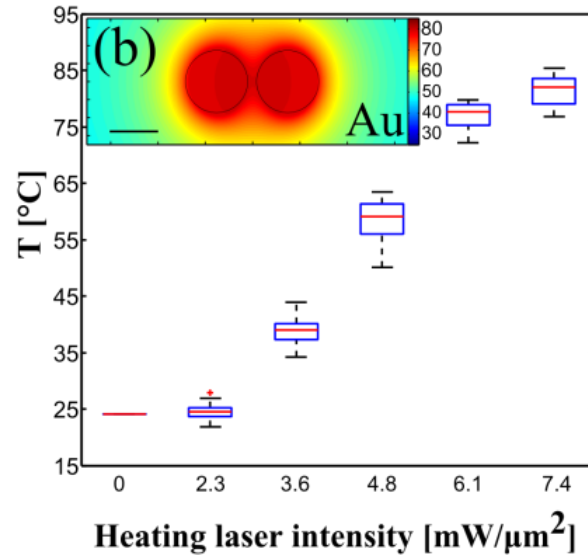
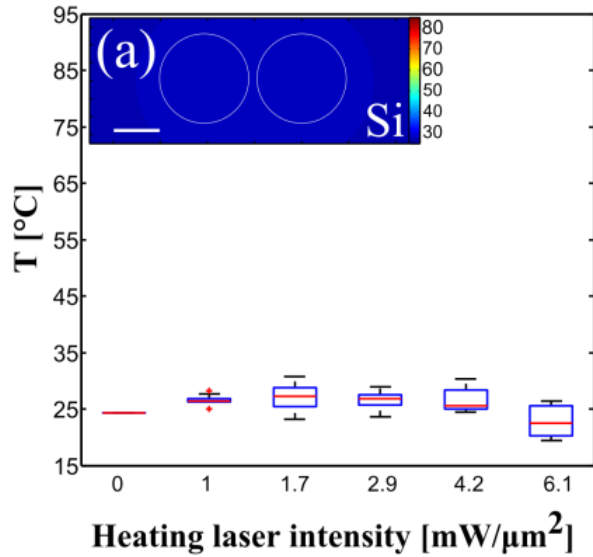


Medición de temperatura Termometría molecular

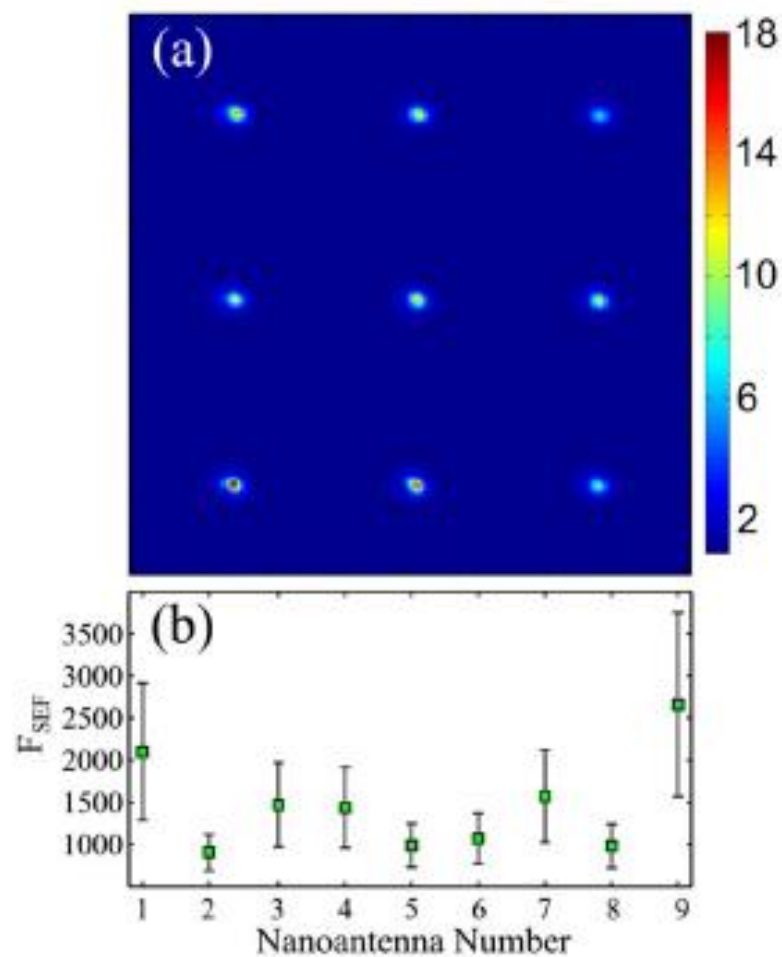
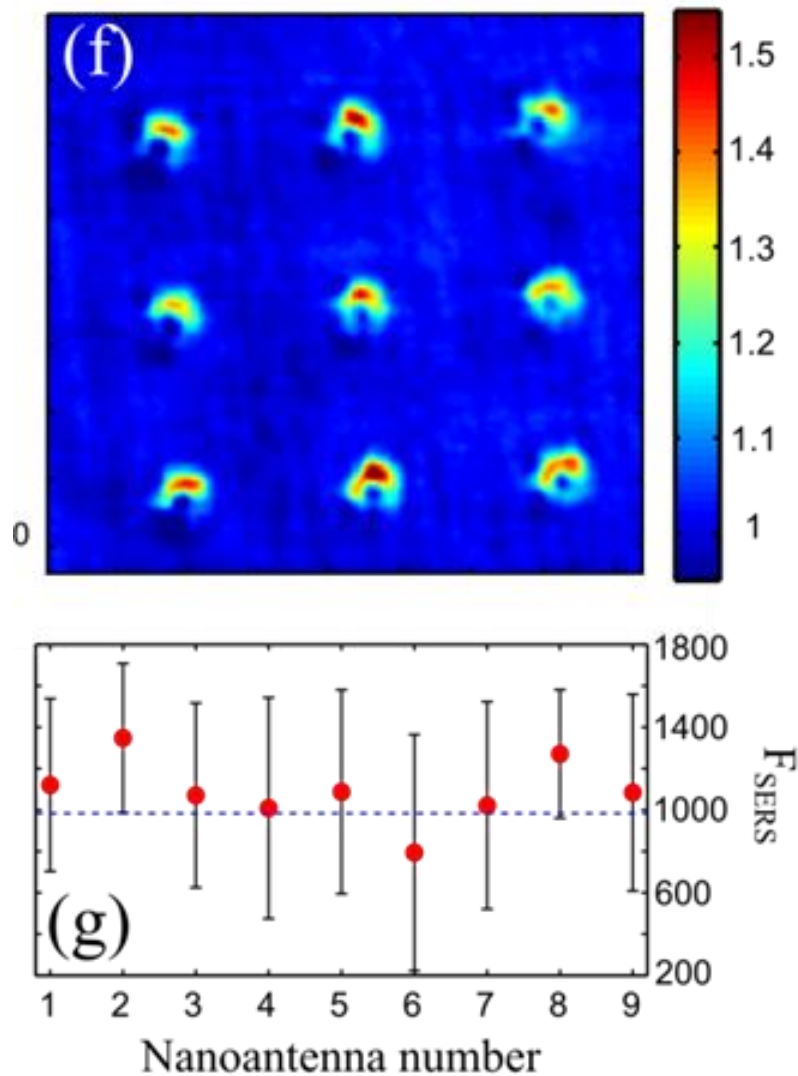


Medición de temperatura

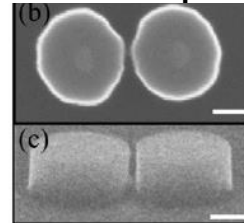
Temperatura en el gap



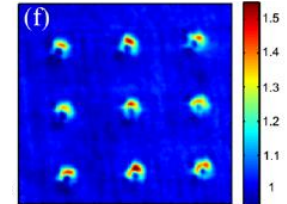
Nanoantenas de silicio SERS – SEF simultáneo



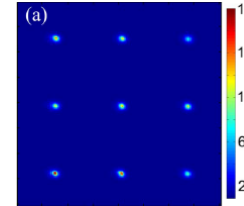
Hemos presentado nuevas nanoantennas no-plasmónicas, dímeros de discos de silicio con un gap de 20nm



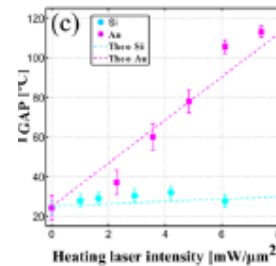
Intensifican la señal Raman de un film polimérico en un factor 1000



Intensifican fluorescencia en un factor 2000



Presentan ultrabajo calentamiento con pendiente 16 veces menor que para estructuras análogas de oro.



Acaban de aceptarlo en
Nature Communications

NANOANTENAS NO PLASMÓNICAS CON ULTRABAJA CONVERSIÓN A CALOR



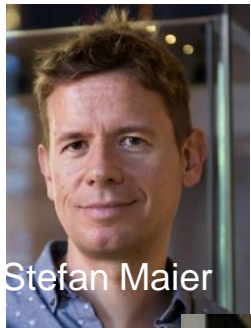
AGENCIA



CONICET



Imperial College
London



Stefan Maier



Emiliano Cortés



Mohsen Rahmani



Pablo Albella

Gracias por su atención