NAVOLCHI

SEVENTH FRAMEWORK PROGRAMME

Unit of Materials and Optoelectronic Devices

University of Valencia

ICMUV INSTITUT DE CIÈNCIA DELS MATERIALS de la Universitat de València

www.uv.es/umdo

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Current State of the work

Phone Conference June 8th 2015

Outline

1-Deliverables and milestones

2-Current Status of the work

2.1-Plasmonic amplifiers

2.2-Photodetectors based on QDs and polymers

Deliverables and Milestones

	Names of the Milestones	Month	Partner
MS24	Demonstration of SPP amplifiers with electrical injection exhibiting 10dB/cm gain	30	UVEG

	Names of the Deliverables	Month	Partner
D4.5	Report on plasmonic photodetectors	33	UVEG

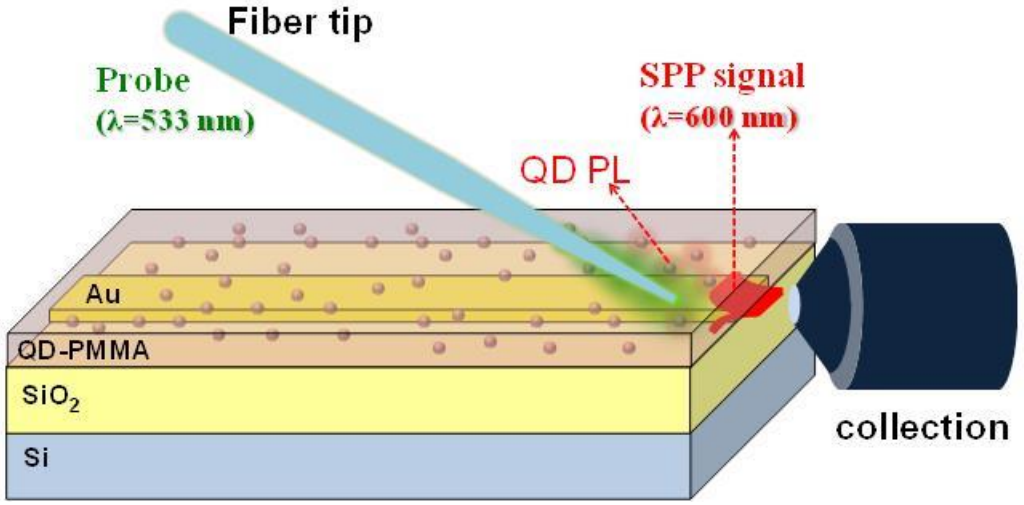
Plasmonics amplifiers

Improvement of Lp in nanoplamonic waveguides

Plasmonic waveguide:

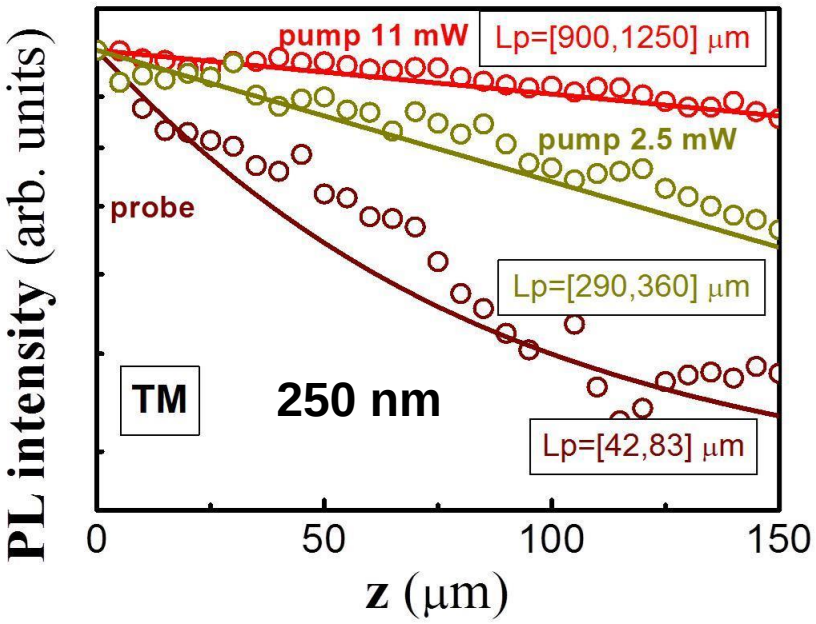
- stripes **width=250-1000 nm height=30 nm**
- cladding PMMA-CdSe (600 nm) **1 µm** (no dielectric modes)

Experimental set up **fiber tip** + **Lock-in** amplifier: Lp of SPP isolated from the pump



Plasmonics amplifiers

Improvement of Lp in nanoplamonic waveguides



Probe: close to theoretical

Pump+Probe: good compensation

250 nm : 15-29 fold

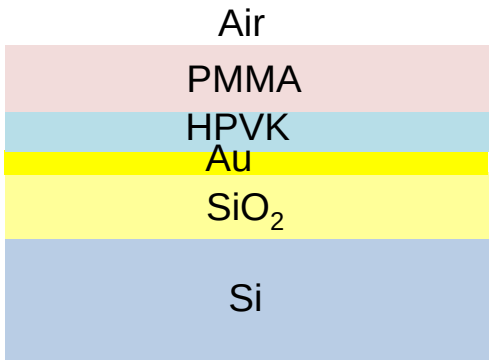
500 nm : 10-35 fold

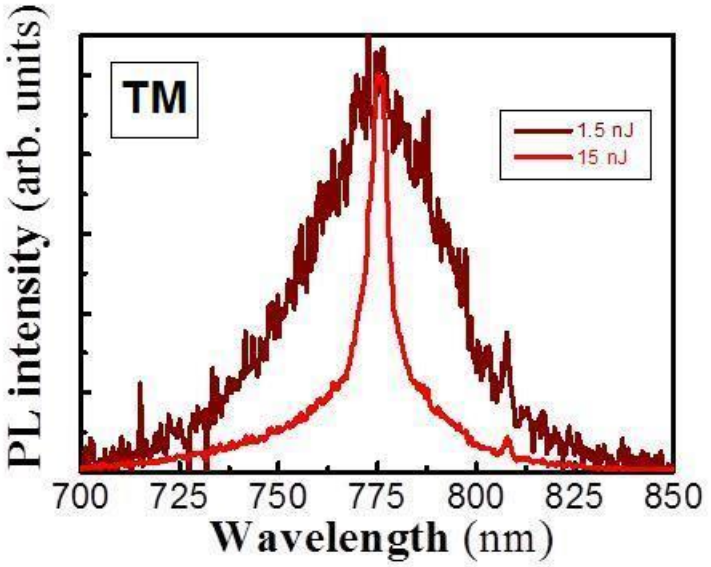
1000 nm: 13-30 fold

Plasmonics amplifiers

Material with gain in dielectric waveguides

Hybrid halide perovskites ($CH_3NH_3PbX_3$)* showed gain





Lp under characterization

*Iván Mora Optoelectronic and Photovoltaic group, Jaime I University (Castellón, Spain)

Photodetector

PbS-QD based microgap photoconductors

Fabrication and test of different microgaps: dropping + MPA ligand exchange
Similar good results in microgap and interdigitated photoconductors