Unit of Materials and Optoelectronic Devices

University of Valencia

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Current State of the work

Phone Conference March 4th 2015

ICMUV
INSTITUT DE CIÈNCIA DELS MATERIALS de la Universitat de València

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

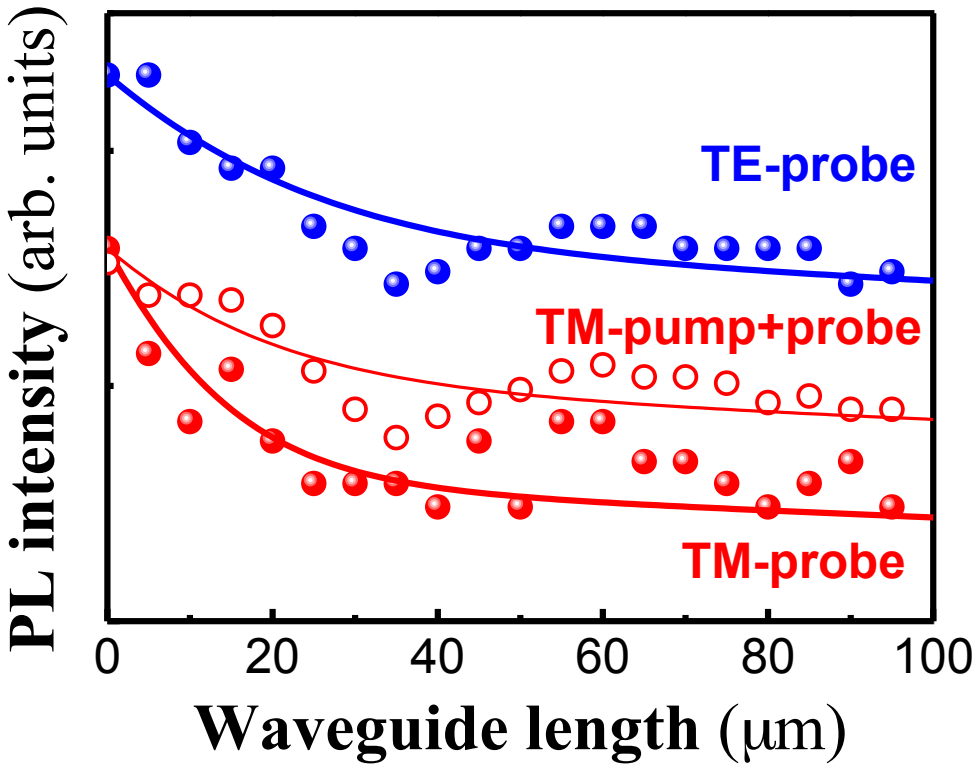
	Names of the Milestones	Month	Partner
MS24	Demonstration of SPP amplifiers with electrical injection exhibiting 10dB/cm gain	30	UVEG

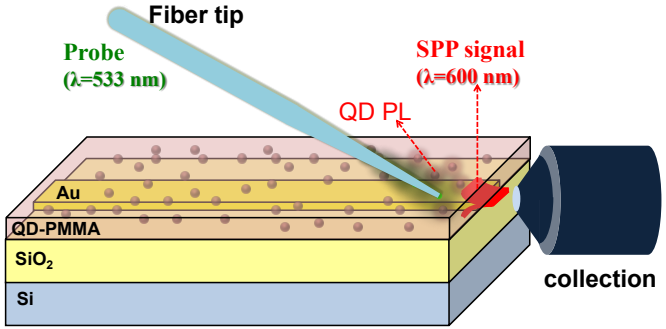
	Names of the Deliverables	Month	Partner
D4.5	Report on plasmonic photodetectors	33	UVEG

Plasmonics amplifiers

Method to characterize propagation length

Experimental set up with **Lock-in** amplifier to isolate de probe





Probe: L_p= [6.25,12.5] μm (theoretical 11 μm)

Pump+Probe: L_p= [11.1,25] μm

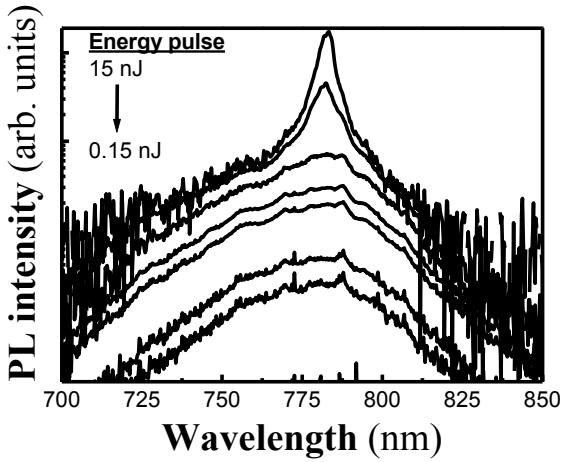
(compensation (<50%)

New materials

Plasmonics amplifiers

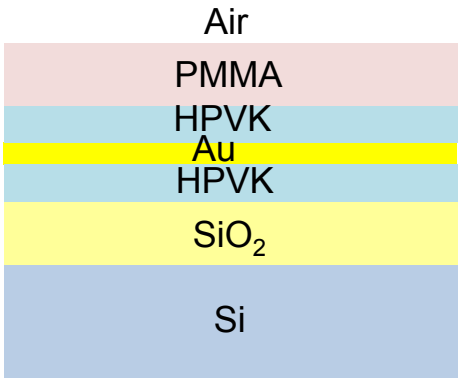
Material with gain in dielectric waveguides

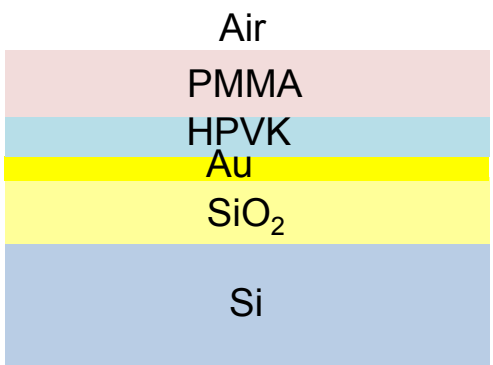
Hybrid halide perovskites ($CH_3NH_3PbX_3$)* showed gain in dielectric waveguides



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

New plasmonic waveguides with HPVK



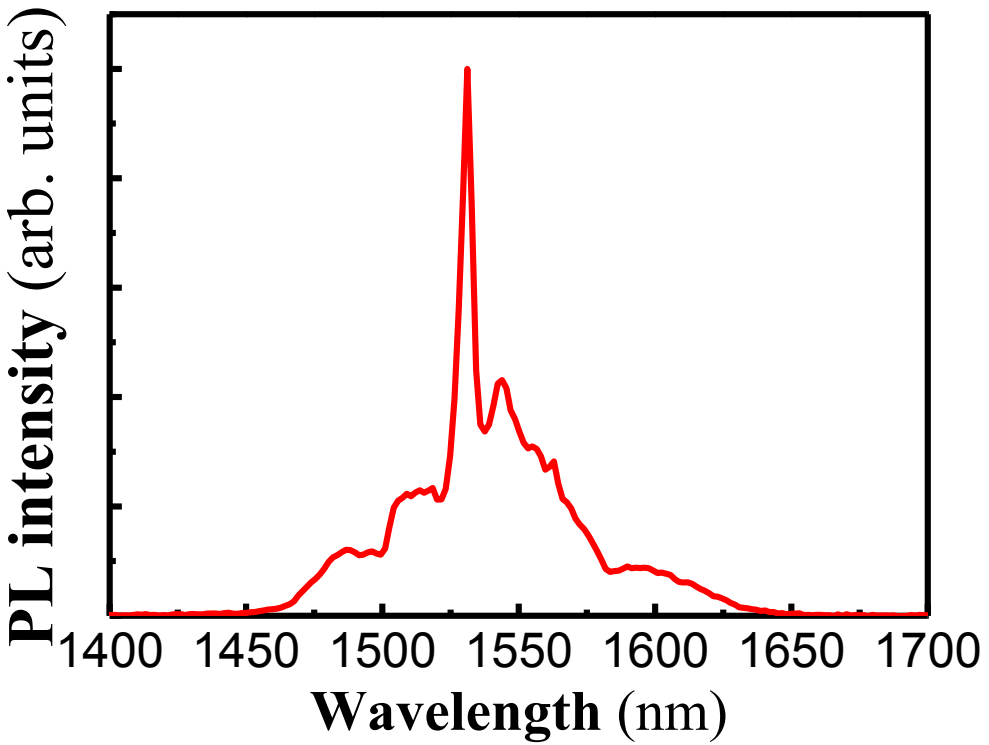


Structures under characterization

Plasmonics amplifiers

Material with emission at 1550 nm

Nanoparticles* with Er-Yb ions incorporated in polymer waveguides

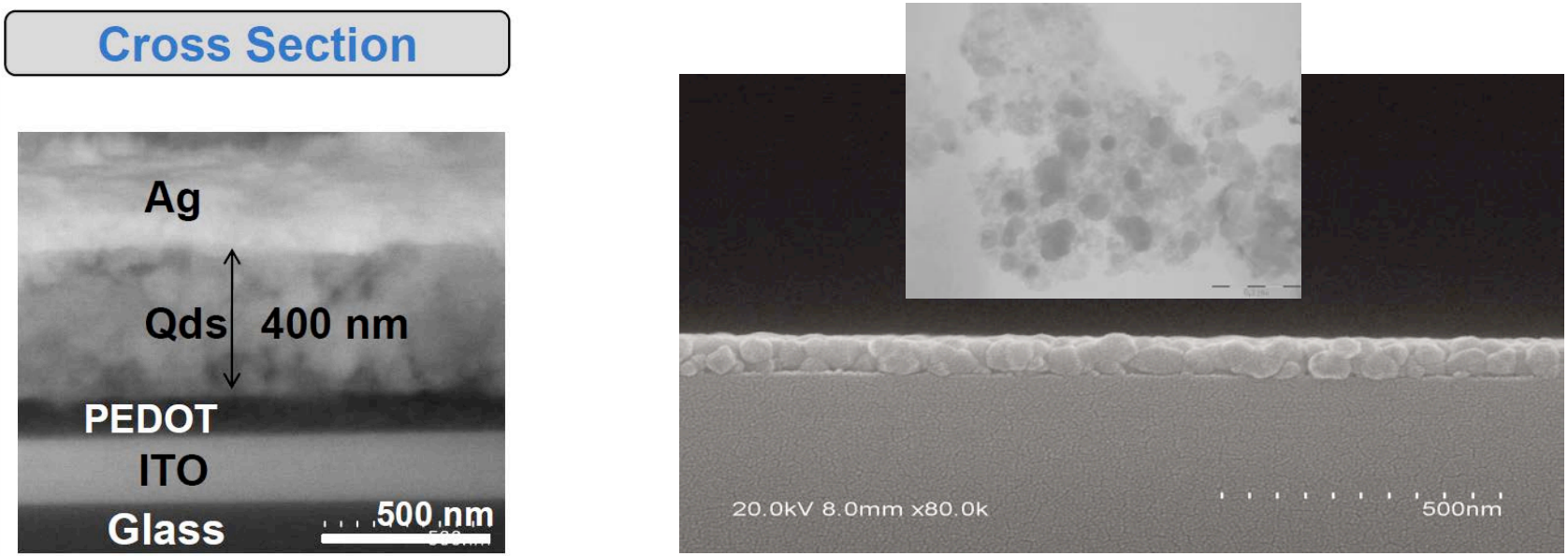


* Autonomous University of Madrid (Madrid, Spain), big NPs
* Institute of Molecular Science (UVEG), NPs 20 nm in diameter

Photodetector

Schottky version:

- Working on transparent electrodes made by solution processing of Al:ZnO NPs



- **New active layers made on lead free QDs of Ag_2Se and Ag_2S**

Microgap version: new generation under processing

Nanogap version: electrodes under fabrication by e-beam