Date of the CVA	29/03/2019

Section A. PERSONAL DATA

Name and Surname	Ovidio Yordanis Peña Rodríguez		
NIE	Y0292104H	Age	42
Researcher's identification number	Researcher ID	C-6640-2009	
	Scopus Author ID	35339446700	
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A.1. Current professional situation

Institution	Universidad Politécnica de Madrid			
Dpt. / Centre				
Address	Instituto de Fusión Nuclear, ETS de Ingenieros Industriales, Universidad Politécnica de Madrid, 28006, Madrid			
Phone	(+34) 673978652	Email	ovidio.pena@upm.es	
Professional category	Assistant Professor		Start date	2018
UNESCO spec. code	220207 - Interaction of electromagnetic waveswith matter			
Keywords	Solid state; Nanomaterials; Physics - Optical physics			

A.2. Academic education (Degrees, institutions, dates)

Bachelor/Master/PhD	University	Year
Materials Science and Engineering	Universidad Nacional Autónoma de México	2007
Materials Science and Engineering	Universidad Nacional Autónoma de México	2006
Nuclear Engineer	Instituto Superior de Ciencias y Tecnología Nucleares	1998

A.3. General quality indicators of scientific production

SCIENTIFIC CONTRIBUTIONS. I have coauthored 3 book chapters and 55 articles in JCR (and peer reviewed) journals, like Science (1 paper, IF=37.2), Nano Letters (1 paper, IF=13.8), Angewandte Chemie International Edition (1 paper, IF=11.3), Nanoscale (4 papers, IF=7.8), Scientific Reports (2 papers, IF=5.2), The Journal of Physical Chemistry C (6 papers, IF=4.5), Applied Physics Letters (2 papers, IF=3.8), Optics Letters (1 paper, IF=3.3) and Optical Materials Express (3 papers, IF=2.8). First, last and/or corresponding author in 44 of those publications, and second author in 7. 78% of papers published in journals within the first quartile (Q1), one of those papers in a journal with an impact factor >35 (3 with IF>10 and 25 with IF>3), according to JCR. The overall publications have attracted 1000+ citations, 18 of them have >20, yielding an h-index of 18, according to Google Scholar (h=16 in WOS and Scopus). Average number of citations per year (accounting last five years) is around 160, and the i10 factor is 32. Results have been personally communicated in >50 national and international symposiums (27 oral and 7 invited or keynote contributions).

R&D PROJECTS. Participation in 28 R&D Projects (5 European; 15 national - 4 in Mexico and 11 in Spain - and 8 funded by Universities) as well as 2 competitive grants funded by private entities, with a total budget of more than 3.5 M€.

SUPERVISION. I have co-supervised a PhD Student (graduated cum laude in September, 2017) and currently I am supervising another and co-supervising one more (expected to graduate by the end of 2018 and 2019, respectively). I have supervised three Master Thesis (graduated in 2013, 2014 and 2017, one of them passed with cum laude).

SCIENTIFIC COMMITMENT. Co-editor of a Special Issue entitled “Laser Interaction with Plasmonic Nanostructures” in the Journal “Applied Sciences”. External proposal reviewer for scientific national agencies: CONACyT (Mexico) and CONICET (Argentina). Referee for most major scientific publishers in my field (Springer Nature, Wiley & Sons, Elsevier, American

Chemical Society, Royal Society of Chemistry, Optical Society of America, etc.), with more than 50 reviews recognized by Publons (https://publons.com/a/1376988/).

INTERNATIONALIZATION. I have opened and maintain a large number of relevant and fruitful international collaborations with prestigious groups in experimental and theoretical Material Science all over the world. This include active collaborations with groups in USA, Mexico, UK and Russia that have yielded results that have been published in high-impact journals and presented in international conferences. I have been invited to participate as supervisor of a Master Thesis in USA (Drexel University, graduated in February, 2017).

TEACHING EXPERTISE. Around 600 teaching hours validated by Spanish ANECA in courses of Physics and Engineering Degrees. Accredited Professor (Assistant Professor, Associate Professor and Private University Professor) by ANECA.

Section B. SUMMARY OF THE CURRICULUM

My bachelor degree was obtained in Nuclear Engineering (1998, cum laude) and subsequently I got Master (2006) and PhD (2007, cum laude) degrees in Materials Science and Engineering. The topic of my PhD thesis was the fabrication and characterization of copper nanoparticles (NPs) embedded in silica for applications in plasmonics. The fabrication was done by means of ion implantation whereas the characterization was performed using electron microscopy and a number of X-ray-based and optical techniques. I also worked in the fabrication of plasmonic particles composed of other metals (gold, silver and zinc) or with different shapes (nanorods).

After graduating, I continued studying the optical response of different types of metallic NPs, like nanoshells and nanorods, mostly from a computational point of view, and developed some tools useful to perform calculations in this field. Experimentally, I was involved in the fabrication, by magnetron sputtering, of ultra-hard coatings based on nanocomposites, the use of a hydrogen plasma generated by a hollow cathode system to etch a silica surface and the fabrication of some core-shell structures. For example, we used the sequential implantation of silver and gold ions to produce Au-Ag structures and a high-current pulsed arc to fabricate silver particles coated with a nanometric layer of amorphous carbon.

I have ample experience in the characterization of materials by means of optical techniques, such as spectroscopic ellipsometry and Raman scattering. An example of this work was the fabrication and characterization of a proof-of-concept organic position sensitive photodetector based on a lateral donor-acceptor concentration gradient. Moreover, I have studied the interaction of swift heavy ions with matter, focusing on applications like the fabrication of optical waveguides or the use of some materials as sensors of radiation damage. In parallel to the main theme of these stays, I have continued with the computational study of the interaction of light with different nanostructures and probably the most important result of this work is the proposal of some simple structures where all-plasmonic Fano resonances can be achieved. Related with this work, I was invited to contribute a book chapter describing the most important applications of metallic nanoshells.

Currently, I work in the framework of the European laser fusion ESFRI project, HiPER, in the design and testing of optical components (final lenses) for fusion facilities. Materials constitute a bottleneck for nuclear fusion; hence, development of new (nanostructured) materials with enhanced radiation-resistance, mechanical and optical properties is an important and challenging topic. Beyond my contributions in nuclear fusion, I lead a research line (with a postdoc and two PhD students) focused on the design and fabrication of plasmonic nanostructures, optimized for the catalysis of endothermic reactions, like water splitting and CO2 reduction to produce hydrogen and synthetic fuels, respectively. Some results of this work have been published in high impact journals, like Science and Nano Letters.

Section C. MOST RELEVANT MERITS (ordered by typology)

C.1. Publications

1 **Scientific paper**. González-Rubio, Guillermo; et al. (13/12). 2017. Femtosecond laser reshaping yields gold nanorods with ultranarrow surface plasmon resonances Science. 358-6363, pp.640-644. ISSN 0036-8075.

2 **Scientific paper**. Peña-Rodríguez, Ovidio; et al. (9/1). 2017. Understanding the ion-induced elongation of silver nanoparticles embedded in silica Scientific Reports. Nature Publishing Group. 7-1, pp.922. ISSN 2045-2322.
3 **Scientific paper**. González-Rubio, Guillermo; et al. (10/8). 2015. Femtosecond laser-controlled tip-to-tip assembly and welding of gold nanorods Nano Letters. American Chemical Society. 15-12, pp.8282-8288. ISSN 1530-6984.
4 **Scientific paper**. Peña-Rodríguez, Ovidio; et al. (4/1). 2013. Tunable Fano resonance in symmetric multilayered gold nanoshells Nanoscale. 5-1, pp.209-216. ISSN 2040-3372.
5 **Scientific paper**. Díaz-Nuñez, Pablo; et al. (8/8). 2018. Using femtosecond laser irradiation to grow the belly of gold nanorods The Journal of Physical Chemistry C. 122-34, pp.19816-19822. ISSN 1932-7447.
6 **Scientific paper**. Rivera, Antonio; et al. (8/8). 2017. Permanent modifications in silica produced by ion-induced high electronic excitation: Experiments and atomistic simulations Scientific Reports. Nature Publishing Group. 7-1, pp.10641-1-10641-14. ISSN 2045-2322.
7 **Scientific paper**. Ladutenko, Konstantin; et al. (4/4). 2017. Mie calculation of electromagnetic near-field for a multilayered sphere Computer Physics Communications. Elsevier. 214, pp.225-230. ISSN 0010-4655.
8 **Scientific paper**. Peña-Rodríguez, Ovidio. (1/1). 2017. Modelling the dielectric function of Au-Ag alloys Journal of Alloys and Compounds. Elsevier. 694, pp.857-863. ISSN 0925-8388.
9 **Scientific paper**. Peña-Rodríguez, O.; et al. (6/1). 2016. In situ monitoring the optical properties of dielectric materials during ion irradiation Optical Materials Express. Optical Society of America. 6-3, pp.734-742. ISSN 2159-3930.
10 **Scientific paper**. O. Peña-Rodríguez; et al. (6/1). 2014. Optical properties of Au-Ag alloys: An ellipsometric study Optical Materials Express. Optical Society of America. 4-2, pp.403-410.

C.2. Participation in R&D and Innovation projects

1 P2018/EMT-4437, Desarrollo del Programa de actividades de I+D multidisciplinares del Centro de Tecnologías para la Fusión (TECHNOFUSION(III)CM) Comunidad de Madrid. Convocatoria de ayudas destinadas a la realización de programas de I+D entre grupos de investigación de la Comunidad de Madrid en Tecnología. José Manuel Perlado Martin. (Instituto de Fusión Nuclear). 01/2019-12/2022. 907.550 €.
2 CA17126 - Towards understanding and modelling intense electronic excitation European Cooperation in Science & Technology (COST). Antonio Rivera de Mena. (Universidad Politécnica de Madrid). 09/2018-08/2022. 400.000 €.
3 Diseño multiescala de materiales avanzados (DIMMAT) Comunidad de Madrid. Antonio Rivera de Mena. (Universidad Politécnica de Madrid). 10/2014-10/2018. 87.400 €.
4 Recubrimientos antirreflejantes para lentes en sistemas de fusión nuclear por confinamiento inercial Moncloa Campus of International Excellence. Ovidio Yordanis Peña Rodríguez. (Instituto de Fusión Nuclear). 03/2012-02/2014. 70.000 €.
5 AIC-2009-1040, Diseño de la cámara de reacción y materiales avanzados para ESFRI HiPER (AIC-2009-1040) Ministerio de Ciencia e Innovación. Programa Nacional de Internacionalización de la I+D. José Manuel Perlado Martin. (Instituto de Fusión Nuclear). 2009-2012. 310.000 €.

C.3. Participation in R&D and Innovation contracts

1 Análisis de viabilidad de catalizadores basados en nanopartículas plasmónicas para aplicaciones energéticas (continuación) Repsol YPF, S.A.. Antonio Rivera de Mena. 07/2015-31/12/2015. 10.829 €.
2 Análisis de viabilidad de catalizadores basados en nanopartículas plasmónicas para aplicaciones energéticas Repsol YPF, S.A.. Antonio Rivera de Mena. 10/2013-P6M. 80.129 €.

C.4. Patents