

Part A. PERSONAL INFORMATION		CV date	21/09/2020
First and Family name	YADIR TORRES HERNANDEZ		
Social Security, Passport, ID number		Age	
Researcher codes	WoS Researcher ID (*)	I-9902-2017	
	SCOPUS Author ID(*)	7003715500	
	Open Researcher and Contributor ID (ORCID) **	0000-0001-9042-9641	

(*) At least one of these is mandatory

(**) Mandatory

A.1. Current position

Name of University/Institution	UNIVERSITY OF SEVILLE		
Department	ENGINEERING AND MATERIALS SCIENCE AND TRANSPORTATION		
Address and Country			
Phone number		E-mail	
Current position	Full-Professor	From	
Keywords	Design and manufacture of porous materials, surface modification (physical and chemical), biofunctional (osteointegration, cells and bacterial response) and tribo-mechanical (instrumented micro-indentation, fracture, fatigue, scratch resistance and wear) behavior, biomaterials, tool materials (cemented carbides, cermet's and multi-layered: alumina-zirconia, WC-Co/WC-Co and Cermet/WC-Co), powder metallurgy (conventional and space-holder technique)		

A.2. Education

PhD	University	Year
Graduated Physics	Universidad de Oriente, Cuba (validated in Spain)	1996 (2000)
Doctor	Polytechnic University of Catalonia	2002

A.3. JCR articles, h Index, thesis supervised...

3 sex-year term recognized (until 2014) - National Commission for the Evaluation of the Researcher Activity (CNEAI), Spain

Supervisor of 3 Doctoral Theses (3rd PhD Thesis) and more than **60 degree and master's final projects**

80 JCR publications - Impact Factor (56 Q1 and 16 Q2, where there are 11 D1), others **11 (SJR)** and **one book chapter** (Elsevier)

1281 citations (ISI WOK). **h-index: 21**; **1591 citations** in Scopus. **h-index: 23**; **2156 citations** in Google Academic. **h-index: 26**; Research gate, **RG score** (34.92), **Reads** (23270)

Citation average/year: 180 (Scopus: 2015-2019)

14 European, national and regional R & D projects: 5 as Principal Investigator (PI)

17 National and International Technology Transfer Projects - Funded by private companies, technology and researcher centers (**5 as IP**)

60 National and International congresses (28 with ISBN, 131 contributions, **6 awards**)

Part B. CV SUMMARY (max. 3500 characters, including spaces)

The acquired research experience (22 years) corresponds to, first, 10 years at Polytechnic University of Catalonia (PhD student, Post-doctoral researcher and research support technician of Center for Structural Integrity, Reliability and Micromechanics of Materials) and, later, to University of Seville as associated professor (last 12 years). The main research topics and expertise are focused, on the one hand, on the field of materials behavior in service: tribo-mechanical (instrumented micro-indentation, fracture, fatigue, scratch



resistance and wear) and bio-functional (osteointegration, adhesion and proliferation of bone cells and response to the presence of bacteria strains) behavior. On the other hand, in the design and manufacture of materials with controlled porosity, "tailored-made" (volumetric fraction, size, shape and distribution), as well as the surface modification (physical and chemical), a research topic I has been leading since 2007. In this context, the final aim of my research is to commercialize new prototypes of implants (dental, intervertebral discs, osteosynthesis plates) with balanced biomechanical and bio-functional properties. Finally, based on my acquired knowledge on mechanical behavior of cutting and forming tools (cemented carbides, cermet's and laminated ceramics (alumina / zirconia)), I also leads at my current position the design, processing and characterization of new multi-layered materials (WC-Co/WC-Co and WC-Co/Cermet).

Part C. RELEVANT MERITS

C.1. Publications (including books)

A.M. Belltrán, B. Begines, A. Alcudia, J.A. Rodríguez-Ortiz, **Y. Torres**, Biofunctional and Tribo-mechanical Behavior of Porous Titanium Substrates Coated with a Bioactive Glass Bilayer (45S5 – 1393)ACS Applied ACS Appl. Mater. Interfaces, 12 (2020) 30170–30180

A. Rodríguez, P. Trueba, J.M. Amado, M.J. Tobar, M. Giner, V. Amigò, **Torres, Y.**, Surface Modification of Porous Titanium Discs Using Femtosecond Laser Structuring, Metals, 10 (2020) 748

J.J. Pavón, P. Trueba, J.A. Rodríguez-Ortiz , **Y. Torres**, Development of new titanium implants with longitudinal gradient porosity by space-holder technique, Journal of Materials Science, 50, 18 (2015) 6103-6112

S. Muñoz, J. Pavón, J.A. Rodríguez-Ortiz, A. Civantos, J.P. Allain, **Y. Torres**, On the influence of space holder in the development of porous titanium implants: Mechanical, computational and biological evaluation, Materials Characterization, 108 (2015) 68-78

Y. Torres, P. Trueba, J.J. Pavón, E. Chicardi, P. Kamm, F. García-Moreno, J.A. Rodríguez-Ortiz, Design, processing and characterization of titanium with radial graded porosity for bone, Materials & Design, 110 (2016) 179-187

S. Heise, M. Höhlinger, **Y. Torres**, J. Pavón, J.A. Rodriguez-Ortiz, V. Wagener, S. Virtanen, A.R. Boccaccini, "Electrophoretic deposition and characterization of chitosan/bioactive glass composite coatings on Mg alloy substrates", Electrochimica Acta, 232 (2017) 456-464

E. Chicardi, C. García-Garrido, M.J. Sayagués, **Y. Torres**, V. Amigó, C. Aguilar, Development of a novel fcc structure for an amorphous-nanocrystalline Ti-33Nb-4Mn (at.%) ternary alloy, Materials Characterization, 135 (2018) 46-56

C. Domínguez-Trujillo, E.Peón, E. Chicardi, H.Pérez, J.A.Rodríguez-Ortiz, J.J.Pavón, J.García-Couce, J.C.Galván, F.García-Moreno, **Y.Torres**, Sol-gel deposition of hydroxyapatite coatings on porous titanium for biomedical applications, Surface and Coatings Technology, 333 (2018) 158-162

A.M. Beltrán, A. Civantos, C. Dominguez-Trujillo, R. Moriche, J.A. Rodríguez-Ortiz, F. García-Moreno, T.J. Webster, P.H. Kamm, A. Mesa Restrepo, **Y. Torres**, Porous Titanium Surfaces to Control Bacteria Growth: Mechanical Properties and Sulfonated Polyetheretherketone Coatings as Antibiofouling Approaches, Metals, 9 (2019) 995

A. Civantos, C. Domínguez, R.J. Pino, G. Setti, J.J. Pavon, E. Martínez-Campos, F.J. García, J.A. Rodríguez, J.P. Allain, **Y. Torres**, Designing bioactive porous titanium interfaces to balance mechanical properties and in vitro cells behavior towards increased osseointegration, Surface and Coatings Technology, 368 (2019) 162-174

C.2. Research projects and grants

PID2019-109371GB-I00

Implantes de base titanio con rigidez adaptada, superficie biofuncionalizada y poros rellenos con polímeros biodegradables, antibacterianos y potencial actividad terapéutica
Ministerio de Ciencia y Tecnología



Main Researcher, Leader: Yadir Torres Hernández (Universidad de Sevilla)
Start: 2020; End: 2022
Total amount: 121.000 €

US-1259771

Modelado e implementación de la técnica *Freeze-Casting*: gradientes de porosidad con un equilibrio tribo-mecánico y comportamiento celular electro-estimulado
Proyectos I+D+i FEDER Andalucía 2014-2020

Main Researcher, Leader: Yadir Torres Hernández (Universidad de Sevilla)
Start: 2020; End: 2022
Total amount: 90.000 €

MAT2015-71284-P

Desarrollo, fabricación y caracterización de compuestos de Ti-Mg-Ag porosos biodegradables y antibacterianos con un mejor equilibrio biomecánico y biofuncional
Ministerio de Ciencia y Tecnología

Main Researcher, Leader: Yadir Torres Hernández (Universidad de Sevilla)
Start: 2016; End: 2020
Total amount: 78.400 €

P12-TEP-1401

Implementación caracterización y validación biológica de técnicas de modificación superficial del titanio poroso pulvimetalúrgico para aplicaciones biomédicas
Junta de Andalucía y UE FEDER-FSE (Proyectos de Investigación de Excelencia, convocatoria 2012)

Main Researcher, Leader: Jose Antonio Rodríguez (Universidad de Sevilla)
Start: 2014; End: 2018
Total amount: 169.000 €
Participation: Researcher

P12-TEP-2622

Obtención y caracterización termomecánica de laminados cermet/metal duro
Junta de Andalucía y UE FEDER-FSE (Proyectos de Investigación de Excelencia, convocatoria 2012)

Main Researcher, Leader: Yadir Torres Hernández (Universidad de Sevilla)
Start: 2014; End: 2018
Total amount: 124.750 €

FP7-NMP-FOF.NMP.2013-10-608729

Energy Efficient Manufacturing Process of Engineering Materials
7º Programa Marco de la U.E (convocatoria 2013)

Main Researcher, Leader: José María Gallardo Fuentes (Universidad de Sevilla)
Start: 2013; End: 2016
Total amount: 373.600 €
Participation: Researcher

MAT2010-20855

Obtención y caracterización de titanio con porosidad gradiente mediante técnicas pulvimetalúrgicas no convencionales
Ministerio de Ciencia y Tecnología

Main Researcher, Leader: Yadir Torres Hernández (Universidad de Sevilla)
Start: 2011; End: 2013
Total amount: 72.600 €

C.3. Contracts

AE-1894/08/2019. Ensayos de Fatiga en Probetas Soldadas. Financiado por la empresa General Dynamics-Santa Bar. Leader of the project. Start: 28-01-2019; End: 28-06-2019.
Total amount: 9.300 €



AE-1651/08/2016. Comportamiento microestructural y mecánico de árboles primarios tratados térmicamente. Financiado por la empresa: Renault España. Leader of the project. Start: 01-04-2016; End: 10-04-2017. Total amount: 4.400 €

ES-1396/2015. Estudio de distintos tribo-sistemas polímero acero. Financiado por la empresa: Xtraice, S.L. Leader of the project. Start: 28-02-2015; End: 31-07-2015. Total amount: 6.240 €

AE-1145/2013. Fabricación de pastillas de combustible nuclear simulado y caracterización de los materiales. Centro de investigaciones energéticas, medioambientales y tecnológicas (CIEMAT). Leader of the project. Start: 12-24-2012; End: 12-31-2015. Total amount: 5.000 €

PI-0653/08/2009. Materiales alternativos al acero para la fabricación de guías de ascensores. Financed by the company: General de Elevadores. Researcher. Start: 11-16-2009; End: 11-19-2010. Total amount: 40.000 €

OI-0606/08/2007. Determinación de las causas de rotura de un gancho de una grúa. Financiado por el JUZGADO DE INSTRUCCIÓN Nº 7 DE GRANADA. Researcher. Start: 01-01-2007; End: 01-01-2008. Total amount: 6.000 €

ES-208/08/2008. Estudio causas del deterioro de chapas. Researcher. Start: 07-01-2008; End: 12-31-2008. Total amount: 2.462 €

ES-1229/2014. Asistencia Técnica Atlantic Cooper año 2014. Financiado por la empresa: Atlantic Cooper, S.A. Researcher. Start: 01-08-2014; End: 12-31-2014. Total amount: 72.000 €

PI-1170/08/2013. Desarrollo de Materiales Porosos y Estructuras Reticulares para Aplicaciones Aeroespaciales. Financiado por la Fundación Andaluza para el Desarrollo Aeroespacial. Researcher. Start: 09-02-2013; End: 12-31-2015. Total amount: 38.000 €

C.4. Patents

Inventors: J.A. Rodríguez-Ortiz, P. Trueba, J.J. Pavón, **Y. Torres**

Title: Dispositivo de compactación de polvos para obtener piezas sinterizadas con porosidad gradiente radial, procedimiento de obtención y uso

Application Number: P201600197. Application date: 14/03/2016

Patent Number: 2632888. Type: Spanish. Date: 15/09/2017

Inventors: J.M. Montes, J. Físico, J.M. Gallardo, F. Gómez, **Y. Torres**, I. Agote, M.A. Lagos, A. Irazusta.

Title: Method of sintering electrically conducting powders and an apparatus for carrying out said method

Application Number: P151487EP. Application date: 19/02/2016

Patent Number: EP16382069.9. Type: Spanish. Date: 23/08/2017

Inventors: J.P.Allain, A.R. Shetty, A. Barnwell, A. Civantos, J.J. Pavon, **Y.Torres**

Title: Nanostructured Titanium-based Compositions and Methods to Fabricate the Same

International Application Number: PCT/US18/26567

C.5, C.6, C.7...

Head of the group of Metallurgy and Materials Engineering (2016 - 2018) – University of Seville, Spain

Head of the line of advanced porous applications (since 2007) - University of Seville, Spain

Scholarship from the **Instituto de Cooperación Iberoamericana** (ICI) (1998-2002)

Deputy Director of **Postgraduate** and **R & D + i** of the **Polytechnic School of Seville** (since 2008)

Guest Editor – Journal: Metals: Special Issue "Design of Cemented Carbides and Cermet".

http://www.mdpi.com/journal/metals/special_issues/carbides_cermet