

CV Date

21/02/2025

Part A. PERSONAL INFORMATION

First Name *	PAULA	
Family Name *	ALVAREDO OLMOS	
Researcher's identification number	Open Researcher and Contributor ID (ORCID) *	0000-0002-0037-6900
	Researcher ID	AAL-8969-2021
	Scopus Author ID	54941316700

* Mandatory

A.1. Current position

Job Title	Profesora Titular
Starting date	2022
Institution	Universidad Carlos III de Madrid
Department / Centre	Ciencia e Ingeniería de Materiales e Ingeniería Química / Escuela Politécnica Superior

Part C. RELEVANT ACCOMPLISHMENTS

C.1. Publications

AC: corresponding author. (n° x / n° y): position / total authors. If applicable, indicate the number of citations

- Scientific paper.** L. García de la Cruz; P. Alvaredo; J. M. Torralba; M. Campos. 2024. Material extrusion: A promising tool for processing CoCrMo alloy with excellent wear resistance for biomedical applications. Materials and Design. 244.
- Scientific paper.** R. Carbajales; C. Sobrino; P. Alvaredo. 2024. Multi-principal element alloys for concentrating solar power based on molten salt. Solar Energy Materials and Solar Cells. 271.
- Scientific paper.** A. K. Pandey; P. Alvaredo; S. Milenkovic; F. Sket. 2022. Development of powders of Ti-Fe-Sn ultrafine eutectics for laser additive manufacturing. Powder Technology. 404-117416.
- Scientific paper.** E. Reverte; M. Calvo-Dahlborg; U. Dalhborg; P. Alvaredo; M. Campos; P. Martín-Rodríguez; E. Gordo; J. Cornide. 2021. Design and production of a new feconicralcu high-entropy alloy: Influence of powder production method on sintering. Materials. MDPI.
- Scientific paper.** E. Prieto; A. Vaz-Romero; J. González-Julián; S. Guo; P. Alvaredo. 2021. Novel high entropy alloys as binder in cermets: from design to sintering. International Journal of Refractory Metals & Hard Materials. Elsevier.
- Scientific paper.** (1/6) P. Alvaredo (AC); J. Molina-Aldareguía; A. Vaz-Romero; E. Prieto; J. González-Julián; M. A. Monclús. 2021. Understanding the Links between the Composition-Processing-Properties in New Formulations of HEAs Sintered by SPS. Metals. MDPI. 11-6, pp.888.
- Scientific paper.** E. Reverte; J. Cornide; M. A. Lagos; M. Campos; P. Alvaredo. 2021. Microstructure Evolution in a Fast and Ultrafast Sintered Non-Equiatomic Al/Cu HEA. Metals. MDPI. 11-6, pp.848.

- 8 **Scientific paper**. M. de Nicolás; H. Besharatloo; P. Alvaredo; J. J. Roa; L. Llanes; E. Gordo. 2020. Design of alternative binders for hard materials. International Journal of Refractory Metals and Hard Materials. Elsevier.
- 9 **Scientific paper**. M. de Nicolás; H. Besharatloo; M. de Dios; et al; E. Gordo. 2019. Influence of the processing route on the properties of Ti(C,N)-Fe15Ni cermets. International Journal of Refractory Metals and Hard Materials. Elsevier.
- 10 **Scientific paper**. P. Alvaredo; M. Dios; B. Ferrari; E. Gordo. 2019. Understanding of wetting and solubility behavior of Fe binder on Ti(C,N) cermets. Journal of Alloys and Compounds. Elsevier. 770, pp.17-25.
- 11 **Scientific paper**. P. Alvaredo; D. Crespo; P. Bruna; E. Gordo. 2018. Influence of carbon content on microstructure and properties of a steel matrix cermet. International Journal of Refractory Metals and Hard Materials. Elsevier. 75, pp.78-84.
- 12 **Scientific paper**. (1/5) P. Alvaredo (AC); L. escribano; B. ferrari; J. A. Sanchez-Herencia; E. Gordo. 2018. Steel binder cermets processed by combination of colloidal processing and powder metallurgy. International Journal of Refractory Metals and Hard Materials. Elsevier. 74, pp.1-6. ISSN 0263-4368.
- 13 **Scientific paper**. E. Prieto; P. Alvaredo. 2018. Processing of a new high entropy alloy: AlCrFeMoNiTi. Powder Metallurgy. Maney Publishing. pp.1-8.
- 14 **Scientific paper**. M. Dios; I. Kraleva; Z. González; P. Alvaredo; E. Gordo; B. Ferrari; R. Bermejo. 2018. Mechanical characterization of Ti(C,N)-based cermets fabricated through different colloidal processing routes. Journal of Alloys and Compounds. Elsevier. 732, pp.806-817.
- 15 **Scientific paper**. M. Dios; Z. González; P. Alvaredo; R. Bermejo; E. Gordo; B. Ferrari. 2017. Novel colloidal approach for the microstructural improvement in Ti(C,N)/FeNi cermets. Journal of Alloys and Compounds. Elsevier. 724, pp.327-338.
- 16 **Scientific paper**. P. Alvaredo; J. J. Roa; E. Jiménez-Pique; L. Llanes; E. Gordo. 2016. Characterization of interfaces between TiCN and Iron-based binders. International Journal of Refractory Metals and Hard Materials. Elsevier. ISSN 0263-4368.
- 17 **Scientific paper**. J. del Prado; M. Sánchez; P. Alvaredo; E. Gordo; A. Ureña. 2016. Study of the Fe-Ti/W system for joining applications in high-temperature fusion reactor components. Fusion engineering and design. Elsevier. 108, pp.48-54.
- 18 **Scientific paper**. J.A. Escribano; P. Alvaredo; B. Ferrari; E. Gordo; J.A. Sanchez-Herencia. 2015. FGM Stainless steel-Ti(C,N) cermets through colloidal processing. International Journal of Refractory Metals and Hard Materials. 49, pp.143-152.
- 19 **Scientific paper**. P. Alvaredo; C. Abajo; S.A. Tsipas; E. Gordo. 2014. Influence of heat treatment on the high temperature oxidation mechanisms of an Fe-TiCN cermet. Journal of Alloys and Compounds. 591, pp.72-79. ISSN 0925-8388.
- 20 **Scientific paper**. J.A. Escribano; B. Ferrari; (3/5) P. Alvaredo; E. Gordo; J.A. Sanchez-Herencia. 2013. Colloidal processing of Fe-based metalceramic composites with high content of ceramic reinforcement. Boletín de la Sociedad Española de Cerámica y Vidrio. 52-6. ISSN 0366-3175.
- 21 **Scientific paper**. (1/3) P. Alvaredo; D. Mari; E. Gordo. 2013. High temperature transformations in a steel-TiCN cermet. International Journal of Refractory Metals & Hard Materials. Elsevier. 41, pp.115-120. ISSN 0263-4368.
- 22 **Scientific paper**. (1/3) P. Alvaredo; S. A. Tsipas; E. Gordo. 2013. Influence of carbon content on the sinterability of an FeCr matrix cermet reinforced with TiCN. International Journal of Refractory Metals & Hard Materials. Elsevier. 36, pp.283-288. ISSN 0263-4368.
- 23 **Scientific paper**. (1/4) P. Alvaredo; E. Gordo; O. van der Biest; K. Vanmeensel. 2012. Microstructural development and mechanical properties of iron based cermets processed by pressureless and spark plasma sintering. Materials Science and Engineering A. Elsevier. 538, pp.28-34. ISSN 0921-5093.
- 24 **Book chapter**. L. García de la Cruz; M. Lagos; P. Alvaredo; J. M. Torralba; M. Campos. 2023. Electrical Resistance Sintering: A Promising Tool To Process CoCrMo Alloy Samples With Exceptional Mechanical Properties. Proceedings EuroPM 2023 Congress & Exhibition. EPMA.

- 25 **Book chapter**. P. Alvaredo; J. M. Torralba; A. García-Junceda. 2021. Sintering of High Entropy Alloys: Processing and properties. Encyclopedia of materials. Metals and Alloys.6. ISBN 9780128197264.
- 26 **Book chapter**. J. M. Torralba; P. Alvaredo; A. García-Junceda. 2020. Review of state of art and new opportunities of Powder Metallurgy for HEA. Proceedings EuroPM 2020 Congress & Exhibition. ISBN 978-1-899072-51-4.
- 27 **Book chapter**. M. de Nicolás; H. Besharatloo; J. M. Wheeler; et al; E. Gordo. 2019. Influence of the processing route on the properties of Ti(C,N)-Fe15Ni cermets. Proceedings EuroPM 2019 Congress & Exhibition. ISBN 978-1-899072-51-4.
- 28 **Book chapter**. M. de Nicolás; P. Alvaredo; L. Llanes; J. J. Roa; H. Besharatloo; E. Gordo. 2018. Alternative matrix design and interface characterization in Ti(C,N) cermets at the micro- and submicrometric length scale. Proceedings EuroPM 2018 Congress & Exhibition. ISBN 978-1-899072-50-7.
- 29 **Book chapter**. P. Alvaredo; M. Nicolás; J. Cornide; E. Prieto; E. Gordo. 2018. High Entropy Alloys as binder in cermets. Proceedings EuroPM 2018 Congress & Exhibition. ISBN 978-1-899072-50-7.
- 30 **Book chapter**. E. Prieto; P. Alvaredo. 2018. Phase evolution during sequential milling of multiprincipal element alloys. Proceedings EuroPM 2018 Congress & Exhibition. ISBN 978-1-899072-50-7.
- 31 **Book chapter**. E. Prieto; C. Gierl-Mayer; E. Gordo; T. Konegger; R. De Oro; P. Alvaredo; P. Alvaredo. 2017. Study of sintering behavior of TiAlCrFeMoNi multiprincipal element alloy. CD Proceedings EuroPM 2017 Congress & Exhibition. ISBN 978-1-899072-49-1.
- 32 **Book chapter**. P. Alvaredo; E. Prieto; S. Guo. 2016. Design and development of a new high entropy alloy by PM. Proceedings of EuroPM 2016 Congress and Exhibition. ISBN 978-1-899072-48-4.
- 33 **Book chapter**. P. Alvaredo; B. Ferrari; M. de Dios; E. Gordo. 2015. Interface study for the design of alternative matrixes in cermets. CD Proceedings EuroPM 2015 Congress & Exhibition. ISBN 978-1-899072-47-7.
- 34 **Book chapter**. J. Escribano; B. Ferrari; P. Alvaredo; E. Gordo; J. Sanchez. 2014. Combination of colloidal techniques and powder metallurgy to process Fe-Ti(C,N) cermets. CD Proceedings EuroPM 2014 Congress & Exhibition. ISBN 978-1-899072-44-6.
- 35 **Book chapter**. E. Gordo; P. Alvaredo; B. Ferrari; J. Escribano; J. Sanchez. 2014. New PM approach for processing fine iron and steel powders. CD Proceedings EuroPM 2014 Congress & Exhibition. ISBN 978-1-899072-44-6.
- 36 **Book chapter**. E. Gordo; B. Ferrari; P. Alvaredo; J. Escribano; J. Sánchez. 2013. Slip casting of ferrous matrix-Ti(CN) cermets. Comparison of the colloidal behavior between Fe and stainless steel. CD Proceedings EuroPM2013. ISBN 978-1-899072-40-8.
- 37 **Book chapter**. E. Gordo; B. Ferrari; P. Alvaredo; J. Sanchez. 2013. Wettability between iron based matrix and Ti(C,N) reinforcement of cermets at high temperature. CD Proceedings EuroPM2013. ISBN 978-1-899072-40-8.
- 38 **Book chapter**. P. Alvaredo; C. Abajo; E. Gordo. 2012. Oxidation behavior of an Fe matrix cermet reinforced with TiCN before and after heat treatments. Comparison with commercial materials for cutting tools. Proceedings EuroPM2012. 2, pp.89-94. ISBN 978-1-899072-40-8.
- 39 **Book chapter**. P. Alvaredo; E. Gordo; S. Tsipas; E. M. Ruiz Navas. 2010. Influence of matrix composition on the sinterability of iron-based cermets reinforced with TiCN. Proceedings World PM2010: International Powder Metallurgy Congress & Exhibition (CD-Rom). ISBN 978-1899072194.
- 40 **Book chapter**. P. Alvaredo; S. Tsipas; E. Gordo. 2009. Effect of carbon content on the PM processing and properties of FeCr-TiCN composites. Proceedings of the International Powder Metallurgy Congress and Exhibition, EUROPM2009. Vol. I., pp.209-215.
- 41 **Book chapter**. R. Carbajales; C. Sobrino; P. Alvaredo. Influence Of The Processing Method On The Microstructure And Mechanical Properties Of Eutectic High Entropy Alloys. Proceedings EuroPM 2023 Congress & Exhibition.

- 42 **Bibliographic review**. J. M. Torralba; P. Alvaredo; A. García-Junceda. 2020. Powder metallurgy and high-entropy alloys: update on new opportunities. Powder Metallurgy. Tandfonline. 63-4, pp.227-236.
- 43 **Bibliographic review**. J. M. Torralba; P. Alvaredo; A. Garcia-Junceda. 2019. High-entropy alloys fabricated via powder metallurgy. A critical review. Powder Metallurgy. 62-2, pp.84-114.

C.3. Research projects and contracts

- 1 **Project**. Desarrollo de un acero sostenible resistente a alta temperatura mediante Composite Extrusion Modelling (CEM). - DESIREDCM. Proyectos generación del conocimiento. Alvaredo. (Universidad Carlos III de Madrid). 01/09/2023-31/08/2026. Principal investigator.
- 2 **Project**. Diseño Aleaciones Maestras Aceros Sinterizados (DAMAS). Ministerio de Ciencia e Innovación. Investigación. Mónica Campos. (Universidad Carlos III de Madrid). 01/09/2022-31/08/2025. 196.000 €.
- 3 **Project**. EARTH - Diseño de aleaciones y producción de polvos. Alvaredo Olmos 1. (Universidad Carlos III de Madrid). 01/12/2022-30/11/2024. 196.535 €.
- 4 **Project**. Aleaciones de alta entropía para aplicaciones de alta temperatura y condiciones extremas_HEATextreme. Comunidad de Madrid. Paula Alvaredo. (Universidad Carlos III de Madrid). 01/01/2022-31/12/2023. 60.000 €.
- 5 **Project**. ADITIMAT-CM. Additive Manufacturing: from material to application.. CAM. CONSEJERÍA DE EDUCACIÓN E INVESTIGACION. Elena Gordo. (Universidad Carlos III de Madrid). 01/01/2019-31/12/2020.
- 6 **Project**. Ultrafine Eutectics by Additive Manufacturing ELAM. Federico Sket. (FUNDACION IMDEA MATERIALES). 01/10/2017-30/09/2020. 150.000 €.
- 7 **Project**. A novel process for manufacturing complex shaped Fe-Al intermetallic parts resistant to extreme environments (EQUINOX). EU Horizon 2020 research and innovation programme under grant number 689510. Srdjan Milenkovic. (FUNDACION IMDEA MATERIALES). 01/02/2016-31/07/2019. 680.000 €.
- 8 **Project**. Materiales Multifuncionales para los Retos de la Sociedad. Multimat-Challenge. Elena Gordo Odériz. (Universidad Carlos III de Madrid). 01/10/2014-30/09/2018. 120.000 €.
- 9 **Project**. Diseño de la microestructura y la microarquitectura de materiales metalcerámicos utilizando tecnologías coloidales y pulvimetalúrgicas. (MITICO). Ministerio de Economía y Competitividad. ELENA GORDO ODÉRIZ. (Universidad Carlos III de Madrid). 01/01/2013-31/12/2015. 200.000 €.
- 10 **Project**. MAGNETIDE: Improved magnets for energy generation through advanced tidal technology. Jose Manuel Torralba. (Universidad Carlos III de Madrid). 08/06/2011-19/06/2014.
- 11 **Project**. S2009/MAT-1585, Materiales estructurales avanzados. Comunidad de Madrid. Elena Gordo Odériz. (Universidad Carlos III de Madrid). 01/01/2010-31/12/2013. 83.456,9 €.
- 12 **Project**. MAT2009-14448-C02-02, Procesamiento por asociación de técnicas coloidales y pulvimetalúrgicas para el diseño de estructuras nanocompuestas metalocerámicas. Ministerio de Ciencia e Innovación. Investigación. Elena Gordo Odériz. (Universidad Carlos III de Madrid). 01/01/2010-31/12/2012. 113.740 €. Others.
- 13 **Project**. A/030035/10, Development of a new generation of tool materials using powder metallurgy processing. Agencia Española de Cooperación Internacional. Elena Gordo Odériz. (Universidad Carlos III de Madrid). 27/01/2011-26/01/2012. 19.500 €. Others.
- 14 **Project**. A/023073/09, Development of a new generation of tool materials using powder metallurgy processing. Agencia Española de Cooperación Internacional. Elena Gordo Odériz. (Universidad Carlos III de Madrid). 17/01/2010-16/01/2011. 14.800 €. Others.
- 15 **Project**. B/020067/08, Desarrollo de nuevos cermets para herramientas de corte. Agencia Española de Cooperación Internacional. Elena Gordo Odériz. (Universidad Carlos III de Madrid). 10/01/2009-10/01/2010. 3.000 €. Others.

- 16 Project.** S-5050/MAT/0077, Materiales estructurales avanzados (TP-UC3M). CAM-Consejería de Educación Dirección General Universidades e Investigación. Elena Gordo Odériz. (Universidad Carlos III de Madrid). 01/01/2006-31/12/2009. 140.875 €.
- 17 Contract.** Servicios de compactación de probetas de tracción y mezcla de polvos en Túrbula PMG POWERTRAIN R&D CENTER S.L.U.. Alvaredo. 01/02/2024-01/05/2024.
- 18 Contract.** Ensayos de caracterización de polvo metálico (análisis de tamaño de partícula y análisis de área superficial) 01/11/2020-01/12/2020.
- 19 Contract.** Caracterización polvos metálicos 01/10/2019-30/11/2019.
- 20 Contract.** Viability study to obtain colored steel by Cermets for luxury watch and jewelry applications Varinor, Branch of Richemont International S. A.. Antonia Jiménez. 11/07/2016-11/05/2018. 52.410 €.
- 21 Contract.** Addenda a la Cátedra Hogänas de I+D en pulvimetalurgia "Brazing filler alloys for PM steels" Hogänas AB. Mónica Campos. 01/03/2014-01/03/2017. 149.700 €.
- 22 Contract.** Addenda a la Cátedra Höganäs de I+D en Pulvimetalurgia. Höganäs. Mónica Campos. 01/01/2005-01/01/2014.

C.5. Stays in public or private R&D centres

- 1 Escuela Politécnica Federal de Lausanne (EPFL). Departamento Física aplicada. Switzerland. Lausanne. 01/06/2010-30/06/2010. 1 month. Guest.
- 2 Universidad Católica de Lovaina. Belgium. Lovaina. 01/06/2009-31/08/2009. 3 months. Guest.
- 3 Universidad Católica de Lovaina. Departamento de Ingeniería de Materiales y Metalurgia. Belgium. Lovaina. 17/11/2008-24/12/2008. 1 month - 6 days. Guest.