| CV date | 06/04/2022 |
|---|---|

**Part A. PERSONAL INFORMATION**

| | | | |
|---|---|---|---|
| First name | Esther | | |
| Family name | Molero Romero | | |
| Gender (*) | Female | Birth date | 08/08/1986 |
| ID number | 03901260T | | |
| e-mail | esther.molero@uco.es | URL Web | |
| Open Research and Contributor ID (ORCID)(*) | | 0000-0001-6436-248X | |

**A.1. Current position**

| | | | |
|---|---|---|---|
| Position | Interim Substitute Professor | | |
| Initial date | 2018 | | |
| Institution | University of Cordoba | | |
| Departament/Center | Mechanics/Polytechnic School | | |
| Country | Spain | Teleph. number | 650783155 |
| Key words | Additive manufacturing, surface engineering, materials, coloidal processing | | |

**A.2. Previous positions (research activity interruptions, art. 45.2.c))**

| Period | Position/Institution/Country/Interruption cause |
|---|---|
| 01/09/2012-31/12/2016 | Researcher/Institute of Ceramics and Glass/Spain |
| 01/09/2010-31/08/2012 | Engineer/R+D+i department of the National Centre for Experimentation in Hydrogen and Fuel Cell Technologies/Spain |

**A.3. Education**

| PhD | University/Country | Year |
|---|---|---|
| Doctorate in Chemistry: Interdisciplinary Science | Autonoma University of Madrid/Spain | 2016 |
| MCs Environmental Engineering and Management | University of Castilla La Mancha | 2012 |
| MCs Renewable Energy, Fuel Cells and Hydrogen | International Menendez Pelayo University | 2011 |
| BSc Chemical Engineering | University of Castilla La Mancha | 2010 |

**Part B. CV SUMMARY** *(max. 5000 characters, including spaces)*

Esther Molero Romero, is a Chemical Engineer from the University of Castilla La Mancha in 2010. After passing the Official Master's Degree in Renewable Energies, Fuel Cells and Hydrogen, (UIMP 2011) and her own Master's Degree in Environmental Engineering and Management (UCLM 2012), she reaches the degree of Doctor by the Autonomous University of Madrid in 2016, with a qualification of outstanding CUM LAUDE and international mention.

In September 2010, she began her professional career in the company and research centers, an activity that would last until 2016. During this period she worked at the National Hydrogen Center and the Institute of Ceramics and Glass (ICV-CSIC) combining research work for the completion of her doctoral thesis, along with her participation in various research projects (years 2012-2016) national and international, and obtained both in public and competitive calls, and with companies. In 2018 she enters the University of Cordoba as a professor, giving classes in the degrees of Mechanical Engineering, Industrial Electronic Engineering and Electrical Engineering where she combines teaching with research.

E. Molero has participated as a full-time researcher in different research projects obtained in public and competitive calls ( ING4MATER, MULTIMAT Challenge, MITICO, ACAM, and

COMETAS). As well as in other research projects applied to the solution of relevant problems in the cultural, social, technical and economic fields, contributing to the innovation of the economic and social fabric (ROCA SANITARIOS, S.A., SINTEF RAUFOSS MANUFACTURING, A.S. TUBACOAT S.L.).

Esther Molero has published 11 articles in journals, which are indexed in the Journal Citation Reports (JCR/WOS) (where they have several citations) and1 book chapter. Since 2010, E. Molero has participated in more than 15 national and international conferences with both written and oral communications and she has supervising several final years projects, research stays and curricular internships.

**Part C. RELEVANT MERITS** *(sorted by typology)*

**C.1. Recent publications: JCR articles and book chapters** *(see instructions)*

(1) JCR article (**Q1**). Romero, P.E., Rodriguez-Alabanda, O., **Molero, E.,** Guerrero-Vaca, G**.,** (2021)*,* " Use of the support vector machine (SVM) algorithm to predict geometrical accuracy in the manufacture of molds via single point incremental forming (SPIF) using aluminized steel sheetS"*, Journal of Materials Research and Technology, 15, 1562*.

(2) JCR article (**Q2**). Sánchez Herencia, A.J., González, Z., Rodríguez, A., **Molero, E.,** Ferrari, B., (2021)*,* "Operational Variables on the Processing of Porous Titanium Bodies by Gelation of Slurries with an Expansive Porogen", *Materials, 14, 4744.*

(3) JCR article (**Q1**). Rodriguez-Alabanda, O., Guerrero-Vaca, G., **Molero, E.,** Romero, P.E., (2021)*,* "Experimental analysis of deep slot milling in EN AW 2024-T3 alloy by stretched trochoidal toolpath and variable helix angle tool", *CIRP Journal of Manufacturing Science and Technology,* 35.

(4) JCR article (**Q1**). **Molero E.,** Fernández J.J., Rodríguez-Alabanda O., Guerrero-Vacas G., Romero, P. E., (2020). "Use of Data Mining Techniques for the Prediction of Surface Roughness of printed Parts in Polylactic Acid (PLA) by Fused Deposition Modeling (FDM): A Practical Application in Frame Glasses Manufacturing". *Polymers, 12, 840.*

(5) JCR article (**Q2**). Guerrero-Vacas G., Carrizo-Tejero D., Rodríguez-Alabanda O., Romero P.E., **Molero E** (2020). "Experimental Study for the Stripping of PTFE Coatings on Al-Mg Substrates Using Dry Abrasive Materials". *Materials, 13, 799.*

(6) JCR article (**Q1**). Rodriguez-Alabanda O., Romero P.E., **Molero E.,** Guerrero Vacas, G., (2019). "Analysis, Validation and Optimzation of the Multi-Stage Sequential Wiredrawing Process of EN AX-1370 Aluminium". *Metals,* 9-9, pp.1021.

(7) JCR article (**Q1**). Guerrero-Vacas G., Rodriguez-Alabanda, O., Romero P.E., Soriano C., **Molero E.,** Lambarri J., (2019). "Stripping of PFA Fluoropolymer Coatings Using a ND: YAG Laser and an Yb Fiber Laser". *Polymers,* 11-11, pp.1738.

(8) JCR article (**Q2**). Guerrero-Vacas G., Rodríguez-Valverde M.A., Castilla-Montilla P., Alguacil-Salamanca F., Rodriguez-Alabanda O., Romero P.E, **Molero E**., Montes Ruiz-Cabello F.J., (2019). "Superhidrophobic Cerium-Based Coatings on Al-Mg Alloys and Alyminized Steel". Coatings, 9-12, pp.774.

(9) JCR article (**Q2).** **Molero, E**., Ferrari, B., Sanchez-Herencia, A.J., Gordo, E., Colombo, P., (2017). "Ti/$Ti_3SiC_2$(/TiC) bulk and foam composites by pyrolysis of polycarbosilane and $TiH_2$ mixture". *Advanced Engineering Materials, 19 (6), pp.1438.*

(10) JCR article **(Q1).** Frajkorova F., **Molero E.,** Montero, P., Gomez-Guillen, M. C., Sanchez-Herencia, A.J., Ferrari, B., (2016). "Biodegradable bi-layered coatings shaped by dipping of Ti films followed by the EPD of gelatin/hydroxyapatite composites". *Journal of the European Ceramic Society*, 34-2, pp.343.

(11) JCR article **(Q2).** Castro, Y, **Molero, E**., Parente, P, Sanchez-Herencia, A. J, Ferrari, B., "Electric field driven assembly of hybrid micelles for shaping of porous silica films". *Advances in Applied Ceramics,* 113-1, pp.28.

(12) Book Chapter. Romero, P.E., Agulló, A., **Molero, E**., (2021) "Manufacturing of Watertight Housing for Electronic Equipment by Fused Deposition Modeling". Fused Deposition Modeling Based 3D Printing. ISBN 978-3-030-68023-7. Pp.363-376.

### C.2. Recent international congress

(1) **Molero, E.,** Guerrero-Vacas, G., Rodriguez-Alabanda, O., Romero, P.E., (2021) "Fabricación de protección impermeable para sistemas electrónicos mediante impresión 3D". XXIII Congreso Nacional de Ingeniería mecánica CNIM-2020.

(2) Gonzalez, Z., **Molero, E**., Sanchez-Herencia, A.J., Ferrari, B. (2020) "Processing of titanium porous bodies by foaming of gelled aqueous suspensions of powders" Euro PM 2018 Congress and Exhibition.

(3) Velasco, B., **Molero, E.,** Ferrari, B., Tsipas, S., Gordo, E., (2017) "Study and optimization of Ti3SiC2 MAX phase foams processed by colloidal methods". *Euro PM2017 Proceedings*, ISBN: 978-1-899072-49-1. Pp. 1-6.

(4) **Molero, E**., Sánchez-Herencia, A.J, Ferrari, B., Gordo, E., Colombo, P., (2015) "Optimization of Ti suspensions for the reinforcement of Ti scaffolds via direct foaming of a polycarbosilane". *Proceeding of the XI National Congress of Composite Materials. AEMC*, ISBN 978-84-697-0406-6. pp.577-582.

(5) Ferrari, B., **Molero, E**., Sanchez-Herencia, A.J, das Neves R.G., Gordo, E., (2016) "Shaping strategies for porous Ti fabrication throughout colloidal chemistry". *Key Engineering Materials*, Trans. Tech Publications, Available on the Internet at: ISBN 978-303835539-7. 704, pp.406-412.

(6) Frajkorova, F., **Molero, E.,** Ferrari, B., (2015). "Electrophoretic deposition of gelatin/hydroxyapatite composite coatings onto a stainless steel substrate". *Key Engineering Materials*, Trans. Tech Publications, Disponible en Internet en: ISBN 978-3-03835-497-0. 654, pp.195-199.

### C.3. Research projects

(1) "LEGOFAB: A toy factory in the classroom as a means of transferring theoretical knowledge into practice". Innovation and Good Teaching Practices Plan. 2021/2022. Main Investigator(s): Pablo E. Romero. Number of participating researchers: 4. University of Cordoba. Researcher.

(2) “Use of LEGO SERIOUS PLAY to improve skills in engineering-related subjects”. Innovation and Good Teaching Practices Plan. 2020/2021. Main Investigator(s): Pablo E. Romero. Number of participating researchers: 3. University of Cordoba. Researcher.

(3) “Experiential learning: automated test bench for mechanisms with a degree of freedom”. Innovation and Good Teaching Practices Plan. 2019/2020. Main Investigator(s): Mario Ruz Ruiz and Rafael Rubén Sola Guirado. Number of participating researchers: 7. University of Cordoba. Researcher.

(4) Manufacture of metal-based, low-adhesion, durable surfaces. MAT2017-82182-R. National plan research projects, 2017. Economy and Competitiveness Ministry. Miguel Angel Rodriguez Valverde and Miguel Angel Cabrerizo Vilchez. 01/01/2018- 31/12/2020. 100188 €. Teamwork Researcher.

(5) ING4MATER: Ceramic-metal composites and W-base refractory alloys for applications under severe service conditions: microstructural design and alternative processing routes (MAT2015-70780-C4-1-P) Economy and Competitiveness Ministry. State Program for the Promotion of Scientific and Technical Research Excellence. Begoña Ferrari. (ICV-CSIC). 01/01/2016-31/12/2019. 437.500 €. Researcher.

(6) MULTIMAT Challenge: Multifunctional materials for the challenges of society (S2013 / MIT-2862) Madrid's community. Call for R & D Programs in Technologies 2013. Begoña Ferrari. (ICV-CSIC). 01/10/2014-30/09/2018. 700.000 €. Researcher.

(7) MITICO: Design of the Microstructure and Microarchitecture of materials Metal-ceramics using Colloidal and Pulvimetallurgical Technologies (MAT2012 38650-C02-02) Economy and Competitiveness Ministry. Call for Fundamental Non-Oriented Research Projects. Begoña Ferrari. (ICV-CSIC). 01/01/2013-31/12/2015. 251.250 €. Researcher.

(8) ACAM: Magnetic Field Shielding (IPT-310000-2010-12) Science and Innovation Ministry. Investigation. INNPACTO. Antonio Javier Sánchez-Herencia. (ICV-CSIC). 01/07/2010-30/06/2013. 1.118.256 €. Researcher.

(9) COMETS: Processing by association of colloidal techniques and Powder metallurgy of nanocomposite metal-ceramic structures (MAT2009-14448-C02-01) Science and Innovation Ministry, Research. National Program of Fundamental Research Projects. Antonio Javier Sánchez-Herencia. (ICV-CSIC). 01/01/2010- 31/12/2012. 269.740 €. Researcher.

### C.4. Contracts, grants, and research periods

(1) Development of an alternative and advantageous process for the manufacture of sanitary appliances by thermal gelling. ROCA SANITARIOS S.A. Begoña Ferrari. 10/03/2015-10/09/2016. 111.111 €. Researcher.

(2) Ti alloying by association of colloid-chemical and power-metallurgical techniques. SINTEF Raufoss Manufacturing. Begoña Ferrari. 20/07/2014-P1Y. 47.786 €. Researcher.

(3) Colloidal processing of ceramic materials: electrophoretic deposition. TUBACOAT, S.L. Begoña Ferrari. 01/05/2014- 31/04/2014. 6000 €. Researcher.

(4) Predoctoral research period in the Department of Industrial engineering at the University of Padova” (Italy). 3 months, period: 01/10/2016 - 30/11/2016.