



## CURRICULUM VITAE (CVA)

**IMPORTANT – The Curriculum Vitae cannot exceed 4 pages. Instructions to fill this document are available in the website.**

### Part A. PERSONAL INFORMATION

CV date

12/02/2022

First name	FRANCISCO JAVIER		
Family name	NAVARRO DOMÍNGUEZ		
Gender (*)	Male	Birth date (dd/mm/yyyy)	
ID number			
e-mail	frando@uhu.es	URL Web	
Open Research and Contributor ID (ORCID)(*)	orcid.org/0000-0002-8277-1073		

(\*) Mandatory

### A.1. Current position

Position	Full Professor		
Initial date	22/04/19		
Institution	University of Huelva		
Department/ Center	Chemical Engineering, Physical Chemistry and Material Science. Chemical Products and Processes Technology Research Centre (Pro2TecS).		
Country	Spain	Teleph. number	
Key words	Rheology, Product Engineering, Phase change material, bitumen modification, emulsion nanomodifiers,		

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

Period	Position/Institution/Country/Interruption cause
22/01/08 to 21/04/2019	Associate Professor. University of Huelva
01/03/01 to 22/01/08	Assistant Professor. University of Huelva

### A.3. Education

PhD, Licensed, Graduate	University/Country	Year
Licensed: Industrial Chemistry	University of Seville	1994
PhD	University of Huelva	2000

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

Dr. Fco. Javier Navarro Domínguez, is a full professor of chemical engineering at the University of Huelva and a member and secretary of the research group "Ingeniería de Fluidos Complejos-TEP185" and of the Chemical Products and Processes Technology Research Centre (Pro2TecS). He has published more than 50 publications, total times cited 1898 and H-index 24.

His research activity is mainly focused on the design of micro and nanostructured products, based on the analysis of the formulation and processing conditions. To this end, it has specialised in a set of experimental techniques focused on rheological, thermal and structural properties, by means of viscous and viscoelastic linear and non-linear measurements, Differential Scanning Calorimetry, TGA, microscopic techniques (optical, electronic scanning

and atomic force), technological tests under standards, chemical analysis (FTIR, chromatographic techniques), X-ray diffraction, laser, interfacial measurements, etc.

Currently, he leads the project "O2emuHEAT-Development of phase change Oil-in-Oil emulsions with enhanced rheological, heat storage and heat transfer properties " PID2020-116905RB-I00 of the 2020 call of the Ministry of Science and Innovation, where new heat transfer fluids (emulsions Phase Change Materials) are designed, based on their rheological and thermal properties for low and high temperature applications.

In addition, its activity has also focused on the following fields:

- Analysis of the physico-chemical interactions of reactive and non-reactive, temperature-resistant surfactants with oil-derived products, with emphasis on the ability to modify thermorheological properties, microstructures and surface and interfacial tension.

- Study of compatibility, thermomechanical characteristics, microstructure and stability of nanoclays (modified bentonites and montmorillonites) and carbon nanotubes with petroleum products and their reactivity with reactive surfactants and polymers.

These research lines derived for his previous activities related to the improvement of thermo-mechanical properties of petroleum derived products through modification with virgin polymers (SBS, SBR, EVA, polyolefins, etc.), recycled polymers (tyre rubber, greenhouse plastics), reactive polymers, non-polymeric reactives, surfactants, mineral fillers, nanoclays, etc. All these materials were devoted to new technologies for roads (improvement of the performance, recycling and low energy pavements), thermal insulation and waterproofing, etc. Furthermore, he has also participated in the characterisation of fluids under extreme conditions of pressure and temperature associated with the extraction of crude oil, recovery of marine oil spills, etc.

He also led the TEP-6689 project, aimed to develop of new dispersions using polymeric and non-polymeric reagents, surfactants and modified nanoclays.

He has participated as a researcher in 20 competitive research projects financed by regional, national and European public bodies, leading 3 of them; 30 research 68/83 contracts with companies, having led one with the company TEXSA. Author of more than 60 international publications of special relevance, of which more than 80% are in Q1 or Q2, and more than 60 contributions to scientific-technical conferences and 10 patents, several of which are being exploited by the companies REPSOL and CTAP.

It actively collaborates with various foreign universities, having spent periods of more than one year in centres in the United Kingdom, Portugal, the USA and Canada

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

#### **C.1. Publications** (see instructions)

1. Delgado-Sánchez C., Cuadri AA., Navarro FJ., Partal P. Formulation and processing of novel non-aqueous polyethylene glycol-in-silicone oil (o/o) phase change emulsions SOL ENERGY MATER SOL CELLS. (2021) 221: 110898.
2. Delgado-Sánchez C., Partal P., Martín-Alfonso MJ., Navarro FJ., Role of crystallinity on the thermal and viscous behaviour of polyethylene glycol-in-silicone oil (o/o) phase change emulsions J IND ENG CHEM. (2021) 103: 348–357.
3. Cuadri AA., Perez-Moreno S. Altamar CL., Navarro FJ., Bolívar JP., Phosphogypsum as additive for foamed bitumen manufacturing used in asphalt paving. J CLEAN PROD. (2021) 283: 124661.
4. Cuadri A. A., Navarro F. J., Partal P. Synergistic ethylcellulose/polyphosphoric acid modification of bitumen for paving applications. Materials and Structures (2020) 53: 6
5. Izquierdo MA, Navarro FJ., Martínez-Boza FJ., Gallegos C., J IND ENG CHEM (2013) 19: 704–711
6. Izquierdo MA, Navarro FJ., Martínez-Boza FJ., Gallegos C., Structure—property relationships in the development of bituminous foams from MDI based prepolymer. RHEOL ACTA (2014) 53:123–131
7. Ortega, F J., Navarro, F J., García-Morales, M, McNally, T. Effect of shear processing on the linear viscoelastic behaviour and microstructure of bitumen/montmorillonite/MDI ternary composites. J IND ENG CHEM (2017) 48 (25): 212-223.

8. Ortega F.J.; Roman C., Navarro F.J.; García-Morales M.; McNally T. Physico-chemistry control of the linear viscoelastic behaviour of bitumen/montmorillonite/MDI ternary composites: Effect of the modification sequence. FUEL PROCESS TECHNOL (2016) 143: 195-203
9. Ortega F.J.; Navarro F.J.; García-Morales M.; McNally T. Thermo-mechanical behaviour and structure of novel bitumen/nanoclay/MDI composites. COMPOSITES PART B: ENGINEERING (2015) 76: 192-200
10. Cuadri, AA.; Garcia-Morales, M.; Navarro, FJ.; Partal, P. Effect of transesterification degree and post-treatment on the in-service performance of NCO-functionalized vegetable oil bituminous products. CHEM ENG SCI (2014) 134: 111-126.

## C.2. Congress

- Congress: XV Reunión del Grupo Especializado de Polímeros; Type of participation: Member of the organizing committee; Date: 24/09/2018 - 27/09/2018; Place: Punta Umbría, Huelva, Spain.
- Congress: VI Congreso de Jóvenes Investigadores en Polímeros; Type of participation: Member of the organizing committee; Date: 22/04/2012 - 26/04/2012; Place: Islantilla, Huelva, Spain

## C.3. Research projects

**Project Reference:** PID2020-116905RB-. **Title:** I00 O2emulHEAT-Development of phase change Oil-in-Oil emulsions with enhanced rheological, heat storage and heat transfer properties

Principal Investigator: F. Javier Navarro Domínguez

Affiliation: UNIVERSIDAD DE HUELVA

Funding Body: Ministerio de Ciencia e Innovación.

Duration: from: 01/09/2021 to 30/08/2024

Budget (€): 174.119 € Project state: approved

**Project Reference:** 802C180000. **Title:** Joint Innovation Unit (UIC-GREENASPHALT)

Participants: Universidad de Huelva y Eiffage Infraestructuras

Principal Investigator: Pedro Partal López Affiliation: UNIVERSIDAD DE HUELVA

Funding Body: Agencia de Innovación y Desarrollo de Andalucía IDEA (Junta de Andalucía)

Duration: from: 01/07/2020 to: 30/06/2023

Budget UHU (€): 522.906,77€ Project state: approved

**Project Reference:** RETOS-2017- CTQ2017-89792-R. **Title:** Study of thermorheologically advanced dispersions designed for heat transport applications

Principal Investigator: F. Javier Navarro Domínguez

Affiliation: UNIVERSIDAD DE HUELVA

Funding Body: Ministerio de Economía, Industria y Competitividad.

Duration: from: 01/01/2018 to: 31/12/2020

Budget (€): 137.940,00 € Project state: approved

**Reference:** RETOS-2014 CTQ2014-56980-R

**Title:** Rheological design of sustainable fluids enhanced with nanoparticles for improved oil and gas drilling and recovery

Principal Investigator: Francisco J. Martínez Boza

Funding Body: Ministerio de Economía y Competitividad.

Duration: from: 01/01/2015 to: 31/12/2017

Budget (€): 199.650€ Project state: approved

**Project Reference:** FP7-PEOPLE-2013-ITN Project number 607524

**Title:** SUP&R ITN— Sustainable Pavements & Railways Initial Training Network

Principal Investigator: Pedro Partal López Affiliation: UNIVERSIDAD DE HUELVA

Funding Body: EU Marie Curie Actions-Initial Training Networks (ITN)

Duration: from: 1/10/2013 - to 30/09/2017

Budget UHU (€): 229.981,62 € Project state: approved

**Project Reference:** P18-RT-4684

Title: Design of Microstructured Fluids for Heat Transport and Storage

Principal Investigator: F. Martínez Boza Afiliation: UNIVERSIDAD DE HUELVA

Funding Body: Consejería de Economía, Conocimiento, Empresas y Universidad (Junta de Andalucía)

Duration: from: 01/01/2018 to: 31/12/2021 Budget UHU (€): 102.268,00€

Project state: approved

**Project Reference:** UHU-1256916

Title: Multi-phase materials based on biopolymers with energy storage capacity for use in sustainable building

Principal Investigator: Antonio Abad Cuadri Vega. Afiliation: UNIVERSIDAD DE HUELVA

Funding Body: Consejería de Economía, Conocimiento, Empresas y Universidad (Junta de Andalucía)

Duration: from: 01/01/2020 to: 31/12/2021 Budget (€): 38.700,00 €. Project state: approved

**Project Reference:** IPT-2012-0316-370000

Title: SUSTAINABLE URBAN TRANSPORT

Principal Investigator: Pedro Partal López Afiliation: UNIVERSIDAD DE HUELVA

Funding Body: MINISTERIO DE ECONOMÍA Y COMPETITIVIDAD (INNPACTO)

Funding Body: Duration: from: 01/01/2012 to 12/2014 Budget UHU (€): 47.860€

Project state: approved

**Project Reference:** TEP-6689

Title: Development of new binders, emulsions and rejuvenating bitumen foams for the recycling of asphalt pavements

Principal Investigator: F. Javier Navarro Domínguez Afiliation: UNIVERSIDAD DE HUELVA

Funding Body: Duration: from: 01/06/2011 to: 31/12/2016 Budget (€): 251.497€

Project state: approved

**Project Reference:** SMARTI ETN-ID: 721493

Title: European Training Network on Sustainable Multifunctional Automated Resilient Transport Infrastructures

Principal Investigator: Pedro Partal López Afiliation: UNIVERSIDAD DE HUELVA

Funding Body: EU Marie Curie Actions-Initial Training Networks (ITN)

Duration: from: 01/03/2017 to 28/02/2019 Project state: approved

#### C.4. Contracts, technological or transfer merits

**Title:** Research and development of new sustainable pavements with improved mechanical and acoustic performance Principal Investigator: Pedro Partal López Afiliation:

UNIVERSIDAD DE HUELVA Funding Body: SACYR CHILE Duration: from: 20/04/2017 to: 30/06/2018 Budget 41.000€

**Title:** Development of advanced Heat Transfer Fluids (HTF) applicable in parabolic trough Technology Principal Investigator: Pedro Partal López Afiliation: UNIVERSIDAD DE HUELVA Funding Body: Abengoa Solar New Technologies S.A. Duration: from: 1/06/2012 to 31/03/2015 Budget (euros): 566.099,79 €

#### Patents

**Title:** Methods for the combined foaming/modification of bitumens for use in paving; Authors: A.A. Cuadri, F.J. Navarro, M. García-Morales, F.J. Martínez, P. Partal; Titular entity: Universidad de Huelva; Date of assignment: 12/05/2015; Publication number: ES 2 516 566 B2; Country of priority: Spain.

**Title:** Bituminous binder for pavement recycling; Authors: P. Partal, F.J. Navarro, M. García-Morales, F.J. Martínez, C. Gallegos, I. Martínez, V. Carrera, A.A. Cuadri; Titular entity: Universidad de Huelva; Date of assignment: 27/11/2012; Publication number: ES 2 375 125 B2; Country of priority: Spain