



Full Conference Programme

Tuesday Morning, 18th February

8:30 Registration

9:00 Welcome/Opening Session (Room: Salon de Actos Novoa Santos)

9:30 Plenary 1 (Chair: Carlos A García-González, Room: Salon de Actos Novoa Santos)

Aerogels: Synthesis, properties and applications

Lorenz Ratke

PL1

Session 1 (Room: Aula Castelao)

Co-chairs: Carlos Silva (Univ. Aveiro), Ignacio Gracia (UCLM)

10:20 **Classification of flow regimes of alginate aerogel particles in a laboratory scale Wurster fluidized bed**

Işık Sena Akgün, Can Erkey

O01

10:40 **Morphological study and *in silico* modelling of biodegradable poly(-caprolactone) scaffolds with controlled architectures obtained by supercritical CO₂ foaming**

Víctor Santos-Rosales, Marta Gallo, José L. Gómez-Amoza, Carlos A. García-González

O02

11:00 **ScCO₂ sterilization of natural-based hydrogel and aerogel for biomedical applications**

Cristiana Bento, Susana Alarico, Nuno Empadinhas, Hermínio C. de Sousa, Mara E. M. Braga

O03

11:20 Coffee break + Poster session

Session 2 (Room: Aula Castelao)

Co-chairs: Manuel Nunes da Ponte (Univ. Nova de Lisboa), Josefa Fernández (USC)

Keynote

11:50 **A molecular perspective on the search for efficient processes for CO₂ capture and separation - the role of modeling**

Lourdes F. Vega

K1

Oral Communications

12:20 **Using Aluminum as reducing agent for the catalytic conversion of ammonia-based CO₂ absorption derivatives**

Juan I. del Río, Eduardo Perez, María Dolores Bermejo, Ángel Martín

O04

12:40 **Continuous fractionation of glycerol acetates. Physicochemical properties glycerol acetates + CO₂ mixtures at high pressure**

Selva Pereda, Mariana Fortunatti-Montoya, Pablo E. Hegel

O05

13:00 Lunch break (Hospedería San Martín Pinario; Praza da Inmaculada, 3, 15704 Santiago de Compostela)



Tuesday Afternoon, 18th February

14:30 Plenary 2 (Chair: Carlos A García-González, Room: Aula Castelao)

**Biorefinery of natural products using compressed fluids-based platforms.
Challenges, needs and answers**

Elena Ibáñez

PL2

Session 3 (Room: Aula Castelao)

Co-chairs: Selva Pereda (U. Nacional del Sur), Sagrario Beltrán (U. Burgos)

15:20 **Research (framework) approach to convey supercritical fluid extraction of
agrofood and forestry byproducts from lab to industrial exploitation**

Marcelo M.R. de Melo, J.A. Saraiva, I. Portugal, C.M. Silva

O06

15:40 **Fish waste valorization through a biorefinery approach**

Rodrigo Melgosa, Liliana Rodrigues, Alexandre Paiva, Pedro Simões, Esther Trigueros, Maria Teresa Sanz, Sagrario Beltrán

O07

16:00 **Process and simulation for the scCO₂ extraction of bio-oil from a supercritical
water ultra-fast hydrolysis of biomass**

Cristiana Bento, Susana Emre Demirkaya, Juan García-Serna and María José Cocero Alonso

O08

16:20 Coffee break + Poster session

Session 4 (Room: Aula Castelao)

Co-chairs: José Coelho (Inst. Politécnico de Lisboa), Herminia Domínguez (U. Vigo)

16:50 **Integrated microwave and supercritical carbon dioxide extraction processes
for astaxanthin recovery from brown crab residues**

Ana N. Nunes, Ana Roda, Luís F. Gouveia, Naiara Fernández, Ana A. Matias

O09

17:10 **Recovery of proteins and free amino acids from *Gelidium Sesquipedale* alga
residue by subcritical water extraction (SWE)**

Esther Trigueros, Patricia Alonso-Riaño, María Teresa Sanz, Cipriano Ramos Rodríguez, Óscar Benito-Román, Sagrario Beltrán

O10

17:30 **Simultaneous extraction and purification of fucoxanthin from *Tisochrysis lutea*
microalgae**

Charles Tardiff, Rocío Gallego, L. Celina Parreira, Tiago Guerra, Elena Ibáñez, Miguel Herrero

O11

17:50 **Safety in supercritical extraction plants**

João Fernandes, Martin Sova, Eduard Lack

O12

18:10 Guided City Tour

19:30-21:30 Tapas dinner (Centro Abanca Obra Social; Praza de Cervantes, s/n, 15782, Santiago de Compostela)



Wednesday Morning, 19th February

9:30	Plenary 3 (Chair: <i>Luísa Durães</i> , Room: <i>Salon de Actos Nova Santos</i>)
	Graphene-based aerogels: design, synthesis and environmental performance Xuetong Zhang PL3

Session 5 (Room: <i>Aula Castela</i>) Co-chairs: Ana Rita Duarte (Univ. Nova Lisboa), Lourdes Calvo (UCM)	
10:20	Aerogels made of graphene oxide and magnetic applications for MRI applications Alejandro Borrás, Ana M. López-Periago, Julio Fraile, Concepción Domingo O13
10:40	Innovative strategies for the decellularization of trabecular bone using supercritical CO₂ and tri(n-butyl) phosphate Marta M. Duarte, Nilza Ribeiro, Inês V. Silva, Juliana R. Dias, Nuno M. Alves, Ana L. Oliveira O14
11:00	Supercritical fluid technology as a key enabling technology in AEROGELS and GREENERING COST Actions Carlos A. García-González, Mónica Pérez-Cabero, Ana R. Duarte O15

11:20 Coffee break + Poster session

Session 6 (Room: <i>Aula Castela</i>) Co-chairs: Sílvio V. Melo (Univ. Federal Bahia), Nora Ventosa (ICMAB-CSIC)	
Keynote	
11:50	Converting batch into continuous processes — New opportunities for supercritical CO₂ technology in pharmaceutical (nano)manufacturing Luís Padrela K2
Oral Communications	
12:20	Encapsulation of 5-aminosalicylic in Eudragit® S-100 by supercritical fluid extraction of emulsions D. Vizcaya, D.R. Serrano, D.F. Tirado, A. Cabañas, L. Calvo O16
12:40	Surfactant-free CO₂ based, microemulsion-like systems: promising nanostructured liquids to gain control over anti-solvent precipitations David Piña, Alessandro Triolo, Andreas Siegfried Braeuer, Nora Ventosa O17

13:00 Lunch break (EIFS2020 site, Faculty of Medicine)

13:45 Flucomp meeting



Wednesday Afternoon, 19th February

14:30	Plenary 4 (Chair: Mara Braga, Room: Aula Castelao)
	Carbon dioxide utilisation: from decaffeination to synthetic fuels Manuel Nunes da Ponte PL4

Session 7 (Room: Aula Castelao)	
Co-chairs: Pedro Simões (Univ. Nova de Lisboa), Angel Martín (Univ. Valladolid)	
15:20	Analysis of the influence of different compounds and optimization of the supercritical epoxidation process of grapeseed oil Juan Catalá, M. Teresa García, Jesús M. García-Vargas, M. Jesús Ramos, Juan F. Rodríguez O18
15:40	Polyethylene glycol-drug conjugates by click chemistry in scCO₂ Sonia López, María Teresa García, Juan Francisco Rodriguez, María Jesús Ramos, Ignacio Gracia O19
16:00	Green and smart polymer for anticancer delivery Beatriz Monteiro, Raquel Viveiros, Teresa Casimiro O20

16:20 Coffee break + Poster session

Session 8 (Room: Aula Castelao)	
Co-chairs: Ana L. Oliveira (Univ. Católica Portuguesa), Concha Domingo (ICMAB-CSIC)	
16:50	Supercritical antisolvent micronization of pharmaceutical compounds José P. Coelho, Patricia Matos, António M. F. Palavra, Rui Loureiro, Beatriz P. Nobre O21
17:10	Formation of pharmaceutical solid solutions using supercritical CO₂ assisted processes Vivek Verma, Kevin M Ryan, Matteo Lusi, Luis Padrela O22
17:30	Supercritical solvent impregnation of mango leaves extract in wound dressings Diego Valor, Antonio Montes, Clara Pereyra, Enrique J. Martínez de la Ossa O23
17:50	Extended copaiba oleoresin release from PCL-Pluronic porous monoliths against <i>Aedes aegypti</i> larvae Gláucia R. Medeiros Burina, Fábio R. Formiga, Elaine C. M. Cabral-Albuquerque; Sílvio A. B. Vieira de Melo; Mara E. M. Braga; Hermínio J. C. de Sousa O24

18:10	Closing Session
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20:00 Gala dinner (Hostal-Parador de los Reyes Católicos; Praza do Obradoiro, 1, 15705 Santiago de Compostela)



Tuesday and Wednesday, 18th and 19th February,
11:20-11:50 and 16:20-16:50

Poster Sessions

(Room: Corridor)

Extraction, Fractionation and Biorefinery

SFE extraction of aromatic and lipid compounds from shiitake mushroom (*Lentinula edodes*)

Eva Tejedor-Calvo, Diego Morales, Pedro Marco, Alejandro Ruiz, Cristina Soler-Rivas
PE01

Supercritical carbon dioxide extraction of Portuguese rice bran oil

José P. Coelho, Inês M. Fernandes, Nuno R. Neng, José M. Sardinha, José M. Nogueira
PE02

Countercurrent supercritical CO₂ extraction of phenolics from the autohydrolysis extracts of *Paulownia* leaves

Paula Rodríguez, Beatriz Díaz-Reinoso, Andrés Moure, Herminia Domínguez
PE03

Supercritical extraction of natural antioxidants from lavender essential oil

Encarnación Cruz, Jesús Manuel García-Vargas, Ignacio Gracia, Juan Francisco Rodríguez, M. Teresa García
PE04

Experimental optimization of sub- and supercritical carbon dioxide extractions of carotenoids from *Dunaliella salina*

Mónica Bueno, Clementina Vitali, J. David Sánchez-Martínez, Rocío Gallego, Jose A. Mendiola, Miguel Herrero, Elena Ibáñez
PE05

Effect of thermal pre-treatment on supercritical CO₂ extraction of *Castanea sativa* burs

Beatriz Díaz-Reinoso, Paula Rodríguez, Andrés Moure, Herminia Domínguez
PE06

Valorisation of tomato waste using supercritical fluid technologies

Marta Marques, Alexandre Paiva, Susana Barreiros, Sandra Simões, Ana Costa, Marta Bento, Pedro Simões
PE07

Sequential extraction (scCO₂ + pressurized ethanol) of *Paulownia* flowers to obtain phenolic/antioxidants compounds

Paula Rodríguez-Seoane, Herminio de Sousa, Mara E. M. Braga, Herminia Domínguez
PE08

Sequential extraction of oxindole alkaloids from *Uncaria tomentosa* leaves by pressurized solvents

José R. S. Botelho, Hermínio C. de Sousa, Mara E. M. Braga
PE09

Enriched oil in DHA omega-3 fatty acid by optimized supercritical fluid extraction of *Aurantiochytrium* sp. microalgae

Inês Ferreira, M.M.R. de Melo, M. Sapatinha, J. Pinheiro, M.F.L. Lemos, N.M. Bandarra, I. Batista, M.C. Paulo, J. Coutinho, J.A. Saraiva, I. Portugal, C.M. Silva
PE10



<i>Silybum marianum</i> extracts obtained by conventional and supercritical fluid extraction techniques	
Ivana Lukic, Stoja Milovanovic, Milica Pantic, Vanja Tadic	PE11
Colombian coffee silverskin as source of bioactive extracts	
A.M. Escamilla-Santos, A.D.P. Sánchez-Camargo, M. Martínez-Rodríguez, G. Alvarez-Rivera, S.R.S. Ferreira, A. Cifuentes, E. Ibáñez, F. Parada-Alfonso	PE12
Valorisation of agro industrial by-products for obtaining bioactive extracts using SFE and PLE: Colombia as case study	
D. Ballesteros-Vivas, A.D.P. Sánchez-Camargo, J.P. Ortega-Barbosa, S.J. Morantes Medina, H.A. Martínez-Correa, A.M. Hurtado-Benavides, L.I. Rodríguez Varela, F. Parada-Alfonso	PE13
Evaluation of the antibacterial activity of <i>Rosmarinus</i> essential oil (<i>Rosmarinus officinalis</i>) obtained by supercritical fluids extraction against bacterial microbiota of rainbow trout (<i>Oncorhynchus mykiss</i>)	
Zully Suarez-Montenegro, F. Argote-Vega, E. Arteaga-Cabrera, A. López-Suárez, A. Hurtado-Benavides, M. Quiroz-Cabrera, A. Cifuentes, E. Ibañez	PE14
Subcritical water fractionation of proteins and free amino acids from Brewer's Spent Grain (BSG)	
Patricia Alonso-Riaño, Esther Trigueros, María Teresa Sanz, Sagrario Beltrán, Cipriano Ramos, Óscar Benito-Román	PE16
The supercritical water approach in valorization of high lignin content biomass	
Tijana Adamovic, Maria Jose Cocero	PE17
Integral valorization of agro-food biomass through pressurized fluids. Case study: Brewery Spent Grain (BSG)	
María Teresa Sanz, Patricia Alonso-Riaño, Esther Trigueros, M. Kashaninejad, D.M. Aymara, Oscar Benito-Román, M. O. Ruiz, I. Escudero, J. M. Benito, Sagrario Beltrán	PE18

Reactions and CO ₂ capture/separation	
Direct hydrothermal conversion of CO₂ capture on aqueous solutions of alkanolamines into formic acid and methane	
Laura Quintana Gómez, Ángel Martín Martínez, M. Dolores Bermejo Roda	PR01
Hydroxyl-functionalised ionic liquids in the synthesis of cyclic carbonates from high-pressure CO₂	
A. B. Paninho, A. Forte, M. E. Zakrzewskaa, K. T. Mahmudov, A. J. L. Pombeiro, M. F. C. Guedes da Silva, M. Nunes da Ponte, Luís C. Branco, Ana V. M. Nunes	PR02



Thermodynamics, Phase Equilibria, and Transport phenomena/properties

The effect of the three phase relative permeability model in low salinity water alternating supercritical CO₂ injection

Silvio A. B. Vieira de Melo, Arley S. Carvalhal, Gloria M.N. Costa **PT01**

Study of volumetric behavior during asphaltene precipitation due to supercritical CO₂ injection using PC-SAFT EoS

Silvio A. B. Vieira de Melo, Fabio P. Nascimento, Gloria M. N. Costa **PT02**

Estimation of multicomponent diffusivities in supercritical and liquid mixtures

Bruno Zêzere, João Iglésias, Inês Portugal, José R. B. Gomes, Carlos M. Silva **PT03**

Molecular dynamics simulation of diffusion coefficients in supercritical carbon dioxide

João Iglésias, Bruno Zêzere, Inês Portugal, José R. B. Gomes, Carlos Manuel Silva **PT04**

Experimental measurements of diffusion coefficients in compressed liquids and supercritical fluids

João Iglésias, Bruno Zêzere, Inês Portugal, José R. B. Gomes, Carlos Manuel Silva **PT05**

Materials, Biomaterials and Sterilization

Modelling the *in vitro* release of Gemcitabine impregnated foams by high-pressure CO₂

Irene Álvarez, C. Gutiérrez, A. de Lucas, Ignacio Gracia, Juan Francisco Rodríguez, M. Teresa García **PM01**

Supercritical impregnation of bioactive extracts in alginate wound dressing

Elisabeth Gómez-Cepero, M. Teresa Fernández-Ponce, Cristina Cejudo, Lourdes Casas, Casimiro Mantell, Enrique Martínez de la Ossa, Clara Pereyra **PM02**

Nanolubricants based on silane-coated nanoparticles using supercritical CO₂

Fátima Mariño, Víctor Santos-Rosales, Carlos A. García-González, Josefa Fernández, Enriqueta R. López **PM03**

Green revalorization strategy following an adsorbent-assisted supercritical CO₂ extraction of terpenoids from olive leaves. Evaluation of the neuroprotective effects of the obtained extracts

Zully Suárez-Montenegro, Mónica Bueno, Gerardo Álvarez-Rivera, Jose A. Mendiola, Alejandro Cifuentes, Elena Ibáñez **PM04**

Strategies for the processing of medicated scaffolds for bone repair by supercritical foaming



Ana Iglesias-Mejuto, Víctor Santos-Rosales, Carmen Álvarez-Lorenzo, Philip Jaeger, José Luis Gómez-Amoza, Carlos A. García- González	PM05
Aerogels made of graphene oxide and metal-organic frameworks for gas separation	
Alejandro Borrás, A. Rosado, J. Navarro, Julio Fraile, J. G. Planas, Ana M. López-Periago, Concepción Domingo, Amirali Yazdi	PM06
The role alginate-nanohydroxyapatite hydrogel on osteogenic response activation of mesenchymal cells	
Joana Barros, Maria Pia Ferraz, Joana Azeredo, M.H. Fernandes, P.S. Gomes, Fernando J. Monteiro	PM07
Preparation of advanced drug delivery systems containing gold nanoparticles using supercritical CO₂	
Albertina Cabañas, Jonathan Bermúdez, M.J. Tenorio, Eduardo Sánchez, Isaac A. Cuadra, Concepción Pando, Diego Felipe Tirado, Lourdes Calvo	PM08
Searching a way of controlling the Pine Wood Nematode insect vector with PCL based matrices obtained by supercritical CO₂ foaming	
João Leocádio, Marisa C. Gaspar, Fernando Bernardo, Pedro Naves, Edmundo Sousa, Hermínio C. de Sousa, Luis Bonifácio, Mara E. M. Braga	PM09
Supercritical CO₂ impregnation of PLA/PCL film with carvacrol for food active packaging	
Ivana Lukic, Jelena Vulic, Stoja Milovanovic, Jasna Ivanovic	PM10
Inactivation of <i>Salmonella</i> Enteritidis in liquid whole egg with supercritical carbon dioxide in isolation and in combination with cinnamaldehyde	
María Teresa Valverde, Diego F. Tirado, Amaury Taboada-Rodríguez, Fulgencio Marín-Iniesta, Lourdes Calvo	PM11
Inactivation of <i>Legionella</i> in aqueous media by supercritical CO₂	
D. Martín, María Teresa Valverde, Diego F. Tirado, Lourdes Calvo	PM12

Particle production	
Solid lipid microparticles (SLMPs) for the local delivery of an anaesthetic agent	
Clara López Iglesias, Cristina Quílez, Joana Barros, Enriqueta R. López, D. Velasco, José L. Jorcano, Fernando J. Monteiro, Carmen Alvarez-Lorenzo, Josefa Fernández, Carlos A. García-González	PP01
Supercritical antisolvent precipitation of Ca/Mg acetate as precursor for Ca/Mg Oxide	
Luis C. S. Nobre, Paula Teixeira, Carla I.C. Pinheiro, António M. F. Palavra, Mário J. F. Calvete, Carlos A. Nieto de Castro, Beatriz P. Nobre	PP02
Using supercritical fluid technology to generate novel cocrystals of poorly soluble drugs	
Barry Long, Kevin M. Ryan, Luis Padrela	PP03
Microencapsulation of supercritical CO₂ extracted rice bran oil in pea proteins	
Óscar Benito-Román, Teresa Sanz, Sagrario Beltrán	PP04