



---

## **COST ACTION GREENERING – DATA COLLECTION**

---

**First name, Family Name: Ana M. Lopez-Periago & Concepción Domingo**

**Type (Academic or Industrial): Academic**

**Country: Spain**

**Leadership position in the COST:**

**Working Group in which you are involved: WP1, WP4**

**E-mail: amlopez@icmab.es**

---

**Laboratory/Company:** Inst. Ciencia de Materiales de Barcelona (ICMAB-CSIC)-  
Supercritical fluids and functional materials (SFFM) group

**Laboratory/Company info (limited to 400 characters):** The Institute of Materials Science of Barcelona (ICMAB-CSIC) is a multidisciplinary research center focused on cutting-edge research in functional advanced materials in the fields of energy, electronics, nanomedicine and application fields yet to imagine. It is located at the Universitat Autònoma de Barcelona (UAB) campus, surrounded by other research and technological centres and with access to many state-of-the-art equipment and scientific facilities. With over 250 members, it is a very attractive place to work for young researchers.

Among the different research groups at ICMAB, our research group, **the Supercritical fluids and functional materials (SFFM) group**, focuses its research in the use of Supercritical CO<sub>2</sub> (scCO<sub>2</sub>) for the design and preparation of functional materials for a wide variety of applications ranging from energy and environment to biomedical applications.

**Link to the home page of the Laboratory/Company:**

<https://icmab.es/>

<https://ssc.icmab.es/supercritical-fluids-and-functional-materials/>

**Fields of expertise (limited to 400 characters):**

scCO<sub>2</sub> for: (i) The preparation of metal-organic frameworks (MOFs) for applications ranging from drug delivery to gas storage/separation. (ii) Synthesis of graphene-based aerogels composites with nanoparticles (NPs@G) with potential applications in the field of materials for health and energy. (iii) biopolymers for tissue engineering.

**5 Main publications or patents:**

- *Green and Solvent-Free Supercritical CO<sub>2</sub>-Assisted Production of Superparamagnetic Graphene Oxide Aerogels: Application as a Superior Contrast Agent in MRI*, A Borra?s, J Fraile, A Rosado, G Marbán, G Tobias, AM López-Periago, C Domingo **ACS Sustainable Chemistry & Engineering** 8 (12), 4877-4888, 2020.
- *Preparation and Characterization of Graphene Oxide Aerogels: Exploring the Limits of Supercritical CO<sub>2</sub> Fabrication Methods*, A Borrás, G Gonçalves, G Marbán, S



Sandoval, S Pinto, PAAP Marques, J Fraile, G Tobias, AM López-Periago, C. Domingo, **Chemistry-A European Journal** **24 (59), 15903-15911, 2018**

- *Crystalline Curcumin bioMOF Obtained by Precipitation in Supercritical CO<sub>2</sub> and Structural Determination by Electron Diffraction Tomography*, N Portole's-Gil, A Lanza, N Aliaga-Alcalde, JA Ayllón, M Gemmi, E Mugnaioli, AM López-Periago, C Domingo. **ACS Sustainable Chemistry & Engineering** **6 (9), 12309-12319, 2018**
- *An Unprecedented Stimuli-Controlled Single-Crystal Reversible Phase Transition of a Metal-Organic Framework and Its Application to a Novel Method of Guest Encapsulation*, F Tan, A López-Periago, ME Light, J Cirera, E Ruiz, A Borrás, F Teixidor, C Viñas, C Domingo, J.G. Planas. **Advanced Materials** **30 (29), 1800726, 2018**
- *Metal-Organic Frameworks Precipitated by Reactive Crystallization in Supercritical CO<sub>2</sub>*, AM López-Periago, N Portoles-Gil, P López-Domínguez, J Fraile, J. Saurina, N. Aliaga-Alcalde, G. Tobias, José A. Ayllón, C. Domingo, **Crystal Growth & Design** **17 (5), 2864-2872, 2017**
- 
- PATENT: N°: ES1641.1351\_12022018.: "Procedimiento de obtención de un aerogel de óxido de grafeno". Authors: Domingo, C.; López Periago, Ana María; Borrás Caballero, A.; Tobías Rossell, G.; Gonçalves, G.; Sandoval Rojano, S.; Fraile Sainz, J.
- 

#### Collaborations:



#### Facilities:

- Multi-purpose continuous and batch supercritical CO<sub>2</sub> equipment working up to 300 bar and 150 oC
- High pressure (up to 350 and 150 oC) phase-monitor equipment equipped with a video camera system
- BET specific surface area analysis equipment. Micromeritics ASAP-2000
-



-  
-  
-