

Patents and current projects

Patents

- Procedure for obtaining **organic xerogels with controlled porosity**. ES-2354 782.
- Use of an **organic xerogel as a desiccant**. WO2017149189.
- Use of an **organic xerogel as a thermal insulator**. WO2017153624.
- **Graphene-doped nanoporous carbon**, preparation process and its use as electrodes. ES-1641.1261.
- **3D Graphene aerogels**. EP21382400.
- Procedure for obtaining **metallic aerogels** and their uses. P202130563.

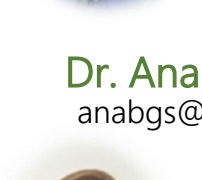
Current projects

- Development of New **Polymeric Carbon Materials** for Energy Storage in **Sodium Dual-Ion Batteries (CARDINaBAT)**. MICINN.
- **Advanced Materials** for **Sustainable Technologies** (IDI/2021/000031). Principality of Asturias.
- Development of Novel **Bifunctional Metal Aerogels** for Improving the **Unitized Regenerative Fuel Cell** Technology (BiMetGel). MICIN.
- New **Sustainable Carbon Materials** as Electrocatalysts in **Fuel Cells (MACSO)**. Domingo Martínez Foundation.
- **New Carbon Materials** as Electrodes in **Flexible Electrochemical Sensors**: Improving Metabolite Monitoring (MATFLEX). BBVA Foundation.
- Development of Carbon Materials for **Sustainable Energy Storage Systems (LINKA20349)**. CSIC.
- Synthesis of **Metal Aerogels** as Disruptive Electrocatalysts for Power Generation in **Microfluidic Devices (COOPA22.035)**. CSIC.

Contact our team



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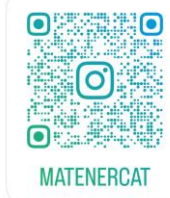
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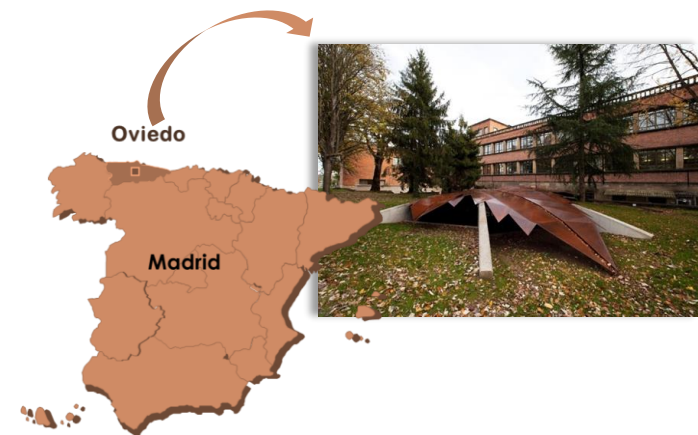
MATENERCAT

Materials for Energy, Environment and Catalysis



About us

MATENERCAT is a research group belonging to the Institute of Carbon Science and Technology (INCAR) of the Spanish National Research Council (CSIC), dedicated to the development of materials through the sol-gel process and their application to current social challenges.

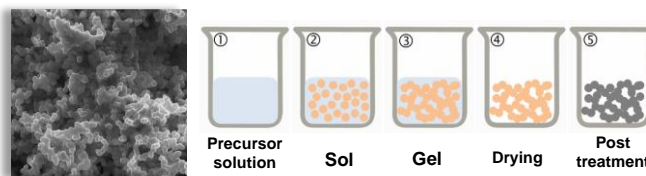


From Oviedo-Asturias, in the north of Spain, we **collaborate** with national and international industries and research and technology centers in **multidisciplinary projects** that lead us to the achievement of **creative solutions**, taking into account their viability **beyond the laboratory scale** for real applications.

Our research lines

The research performed at **MATENERCAT** focuses on optimizing the design and production of **materials** to improve the performance of **electrochemical devices** used in catalysis, energy processes, environmental protection or analyte detection applications.

SUSTAINABLE MATERIALS obtained by the SOL-GEL process assisted by microwave heating.

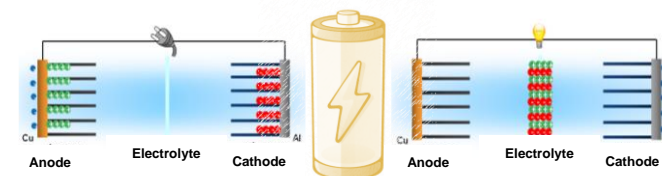


- ✓ Synthesis of material with tailored porous properties and chemical compositions.
- ✓ Development of efficient and easy scalable synthesis procedures.
- ✓ Physicochemical characterization of porous materials.

Carbon aerogels
Graphene aerogels
Silicon aerogels
Hybrid aerogels
Metallic aerogels



ELECTRODES for ELECTROCHEMICAL DEVICES of high energy and/or power, long life, low cost and environmental friendly.



- ✓ Development of sustainable alternatives for energy storage.
- ✓ Optimization and development of electrodes at different scales.
- ✓ Development and electrochemical characterization of different devices at prototype scale.

Batteries (Li-ion, Na-ion, Na dual-ion, Al-ion, Li-S)
Supercapacitors
Fuel cells
Electrolyzers
Sensors

