

Customized 3D graphene aerogels

CSIC and the University of Oviedo have developed a custom simple-making carbon aerogel employing microwaves technology with all the advantages of this kind of materials and high electrical conductivity due to the adding of graphene. Therefore, this invention possesses a bundle of exceptional properties that makes them suitable for tailoring high-performance electrode materials that would be used as biosensors, fuel cells or batteries.

Industrial partners from electrochemical industry are being sought to collaborate through a patent licence agreement.

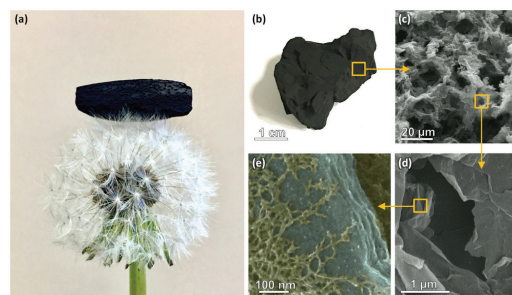
An offer for Patent Licensing

Highly-conductive tailored aerogel for electrode materials

Researchers from CSIC and University of Oviedo have designed a customized 3D graphene aerogel synthesized using microwave heating: an effective, economic, simple and time reducing technique.

Properties/ 25°C	Procedure 1	Procedure 2
Graphene Oxide wt%	39-41	15-17
Porosity %	97-99	95-97
Macropore size μm	50-100	5-15
Conductivity S/m	710-730	850-870
Density mg/cm^3	70-80	80-85
BET surface m^2/g	350-450	400-450

The resulting material presents properties difficult to match, as it has high electrical conductivity and high porosity. Furthermore, it also displays large macroporosity, low density and high surface area with better values than other similar materials in the literature.



(a) Photography of graphene aerogel standing on the top of a dandelion and (b-e) photography and SEM images of aerogel at different magnifications

Main innovations and advantages

- The material exhibits simultaneously ultra-low density, high electrical conductivity and high porosity
- The properties can be adapted for specific application by control of the synthesis procedure
- The synthesis is partially performed using microwave heating, a very simple, cost-effective, fast and effective method

Patent Status

Priority patent application filed suitable for international extension

For more information, please contact:

Javier Camús Hernández

Deputy Vice-Presidency for Knowledge Transfer

Spanish National Research Council (CSIC)

Tel.: 984180170

E-mail: j.camus@csic.es

comercializacion@csic.es