KIVOTO

Graphenea

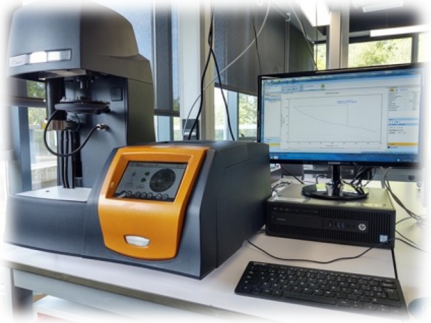
Graphene Innovations for energy storage applications

Amaya Ortega
Product & Application Manager

Just positive
Impact additives

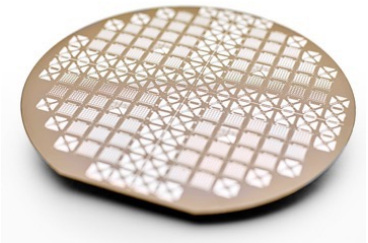
June 2025

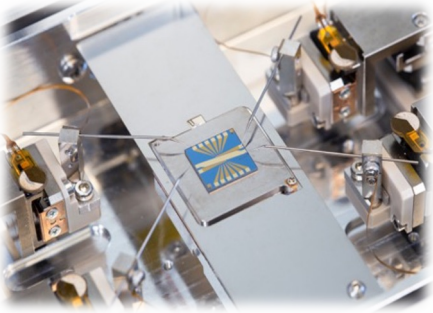
Graphenea



Amat

Semiconductor

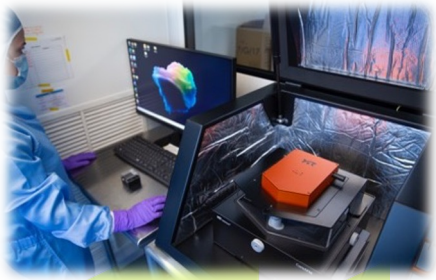




Chemical Exfoliation technology
c. 30% of the revenues

Chemical Vapour Deposition technology
c. 70% of the revenues

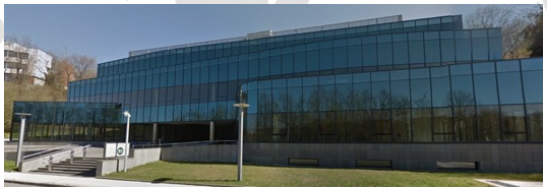
15 years of expertise in Graphene



Graphenea

Business office (US)

Headquarters (Spain)



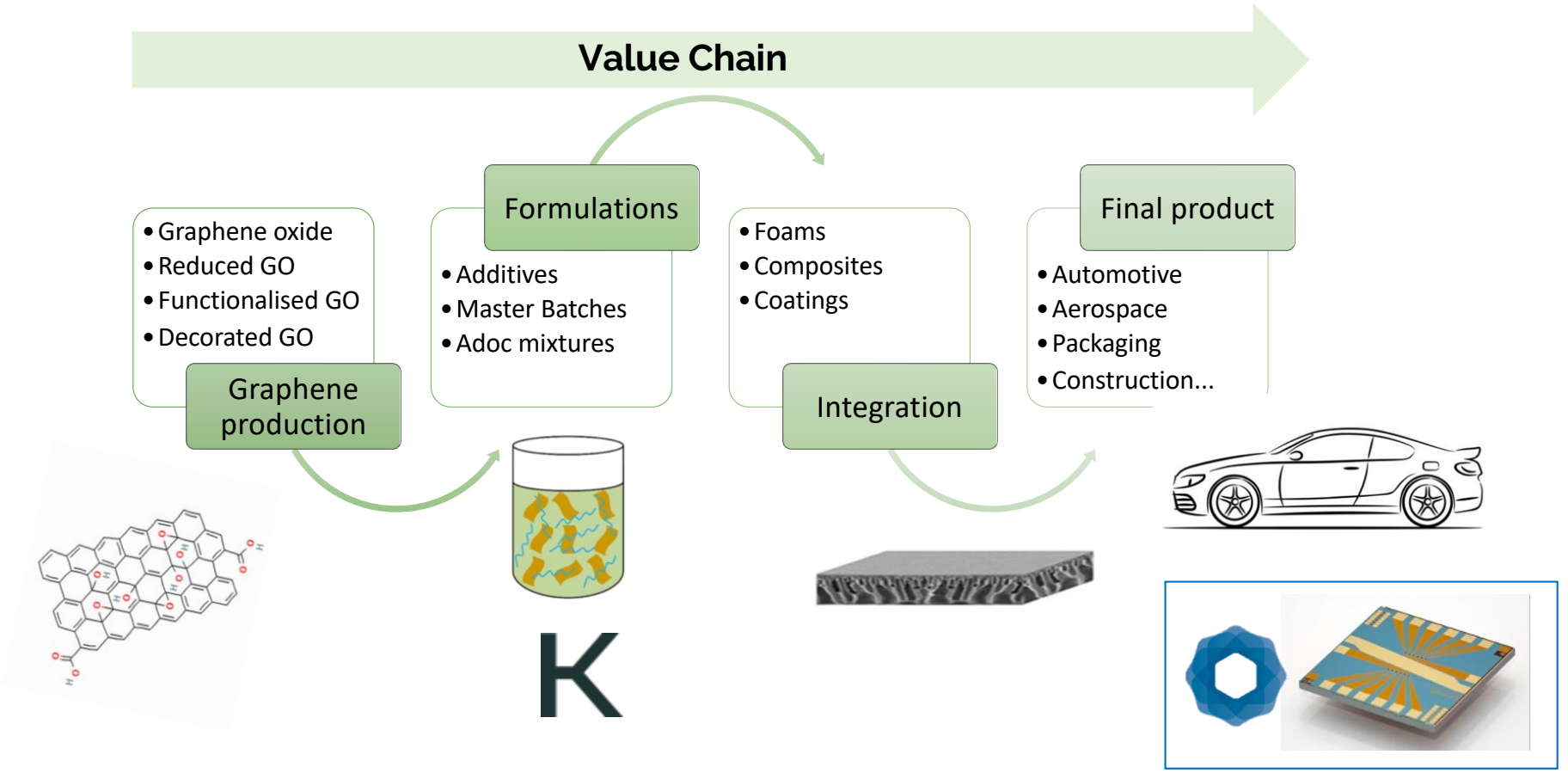
- Founded April 2010

⬡ Graphenea site
⬡ Official distributor site

Just positive
Impact additives

KIVORO

KIVORO develops, manufactures and commercializes disruptive industrial additives to increase **performance**, **save energy** and **CO_2 emissions**



Key factors

KIVOTO

11 Staff

14 EU funded projects

19 National & Regional funded projects

>15 years of R&D

3 Patents

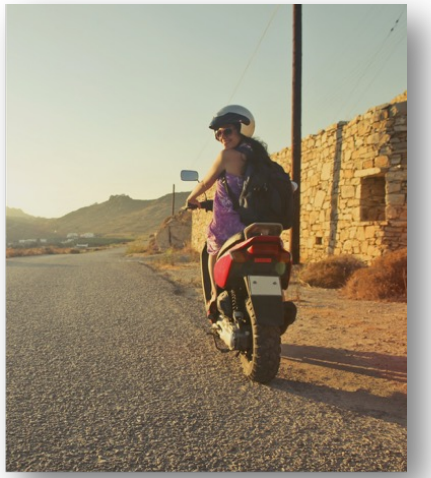
19 Publications

More than 500 publications with our Graphene oxide

KIVORO

Own developments

Asphalt

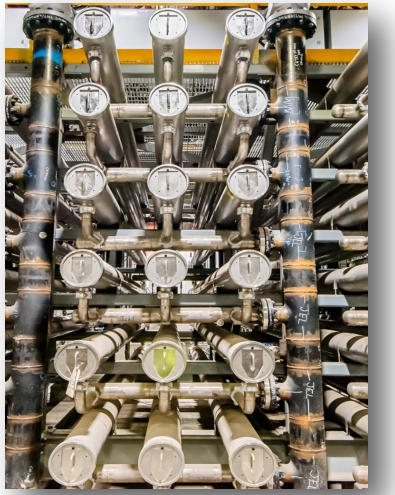


- Increase Fatigue resistance
- Improve rutting properties
- Good for high traffic roads

Concrete

- Increase in the expected life of concrete by 50%
- Improved resistance to harsh environments
- Improved mechanical performance.

Filtration



- Reduction of 50% energy consumption by substituting evaporation with membranes for hard environments

Packaging

- Heat transfer additive
- **Increase in recycled materials performance and efficiency** of the production plants reducing unit costs and CO2 emissions per metric ton.

EP4028482B1

TRL5 → TRL7 → TRL9 → Industrial

Cement and concrete

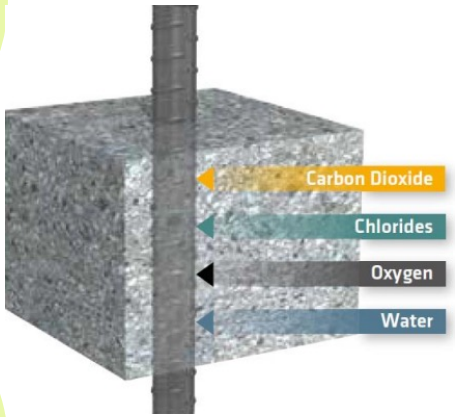
Increasing durability in highly corrosive environments

Challenge

Corrosion issues in aggressive environments

Maintenance cost & Failure in construction

New infrastructure require long service spans & Need more durable concrete



Cement Enhancer

Solution

26%Carbonation reduction

95% Oxygen permeability

CO_2 O_2

KCE ability to target multiple causes of degradation

Cl H_2O

Extended service life 50%
Low corrosion risk

47% reduction in water permeability

Packaging

Heat transfer additive (HTA) to optimize board production

HTA

Challenge

Heat limited production

Impact on product speed and quality

Edge delamination and blistering

Waste material

Solution

Machines run cooler, lowering the energy consumption and CO2
More cost effective

Improves the *drying rate* of the adhesive

Improvement of the *bond performance* at high speeds
Waste reduction

Graphenea

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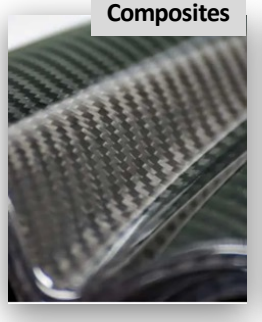
Graphenea in energy storage applications

GIANCE
Fused with Sustainability

Graphene Alliance for Sustainable Multifunctional Materials to Tackle Environmental Challenges

K

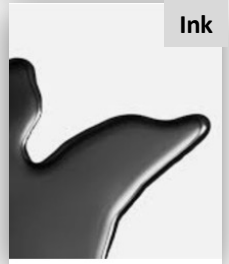
Composites



Foams

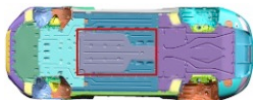
Membranes
Catalyst

Ink

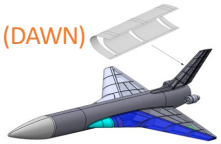


Automotive and Aerospace

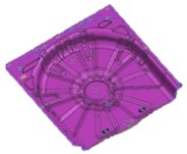
UC1 (CRF)



UC5 (DAWN)

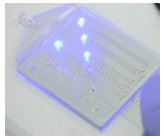


UC2 (CRF)



UC6 (BOEING)

Structural Health Monitoring

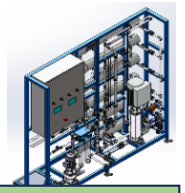


UC8 (EURECAT)

Water treatment

UC4 (LENNTECH)

UC3 (IRIS)



Energy (H_2)

UC7 (Forvia)

UC10, UC 11 (HYDROSOLID)

Solid lubricant

UC9 (NANOPROM)

STELLANTIS · IRIS PLAYGROUND FOR NEW IDEAS · BOEING · FORVIA faurecia · DAWN AEROSPACE · HYDROSOLID · LENNTECH

GRAPHENE FLAGSHIP

UK Research and Innovation

This project has received funding from the European Union's Horizon Europe research and innovation programme under Grant Agreement No 101119286 and UKRI under Grant Agreement No 10090645 and No 10101683.

Industry driven project

BIONTIER

BreakIng FrOntiers in sustainable and circular biocomposites with high performance for multi-sector applications

Bio-based Materials and composites

H_2 storage tank

High-pressure tanks for reverse osmosis

Lightening of structural parts
Energy savings

Industry driven project

STELLANTIS
COMPOSITEC
TURKISH AEROSPACE
IRIS PLAYGROUND FOR NEW IDEAS
HYDROSOLID

Circular Bio-based Europe Joint Undertaking
Co-funded by the European Union
UK Research and Innovation
Bio-based Industries Consortium

The project is supported by the Circular Bio-based Europe Joint Undertaking and its members under grant agreement No 101155925 and UKRI grant agreement No 10137600.

Development of a pilot electrolyser with improved performance incorporating new developments in materials and processes to H2umidity® technology (H2UMIDITY®-PLUS)

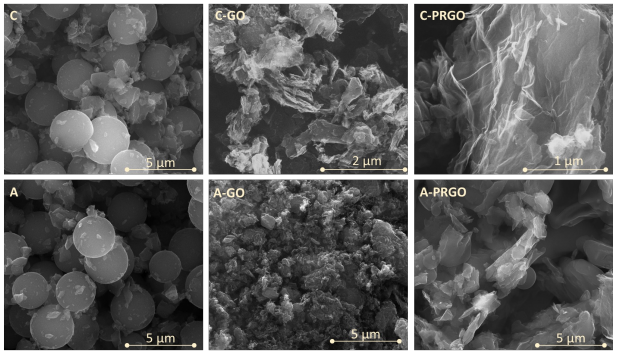
OBJECTIVE: **To optimise efficiency and reduce process costs** of H2umidity® technology at prototype scale for application in real environments, **incorporating new materials and core stack component designs, and novel modes of operation.**

Water2kW · Graphenea · CSIC · INCAR · ICMM Instituto de Ciencia de Materiales de Madrid · Universidad Politécnica de Madrid · hpnow

H2umidity®
PEM-WE
(Proton Exchange Membrane- Water Electrolysis)

→

H2umidity®-PLUS
AMMA-WE
(Advanced Materials Magnetically Assisted- Water Electrolysis)



- More efficient electrocatalyst based on **DOPED GRAPHENE AEROGELS**
- External stimulus
- Advanced control system
- Virtual prototyping

Find more information about **H2umidity®-PLUS** in:
www.linkedin.com/in/h2umidity-plus-project

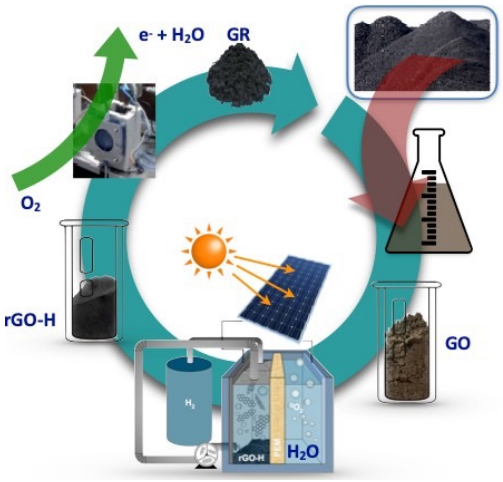
ACKNOWLEDGEMENTS: This project is funded by the European Union - NextGenerationEU, under the Recovery, Transformation and Resilience Plan

Financiado por la Unión Europea NextGenerationEU

Ministerio para la Transición Ecológica y el Reto Demográfico · IDAE · Plan de Recuperación, Transformación y Resiliencia · Hidrógeno renovable · Cadena de valor

LESGO

Light to store Energy in reduced Graphene Oxide



Demonstration as graphene oxide (GO) can be used to securely store H using an energy efficient hydrogen loading based on the use of a flow cell electrolyser

Zero-emissions electricity

Cost effective energy storage

Hybrid rGO-H/battery technology

The advantages of rGO-H include safe storage, easy transportation, an energy density over 100 times larger than that of H2 gas and no CO2 emissions in the electricity generation process.

ICFO · Graphenea · Teknologirådet Danish Board of Technology · CNR NANO Pisa NEST · Aalto University School of Chemical Technology

IREC · HYSYTECH Filling the Gap · GENCELL · CRF Centro Ricerche Fiat · Universität Bern

NRG-STORAGE

K

INTEGRATED POROUS CEMENTITIOUS NANOCOMPOSITES IN NON-RESIDENTIAL BUILDING ENVELOPES FOR GREEN ACTIVE/PASSIVE ENERGY STORAGE

The main objective of the project is to develop a novel ultra-light concrete that includes **PCMs and graphene** with both active/passive energy storage systems in non-residential buildings

- ✓ 25% improved insulation capacity;
- ✓ 10% higher energy-storage capacity;
- ✓ 10% higher water and air tightness, and
- ✓ less than 15% cost increase than actual solutions.

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Impact additives

Private and Confidential

Moving forward

Company

- Expertise in Nanomaterials
- Highly experienced Production and R&D teams
- Potential to improve and expand product offerings
- Net Carbon Zero Company

Product

- Graphene oxide-based products
- Adaptation to the application
- Scalability
- Quality

Types of collaboration

- High expertise in Founded projects
- R&D compatibility with your products
- Addition into your formulations
- Supplier agreement
- Joint developments

Contact us!

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Let´s go science!