LIÈGE université

Greenmat

GREEnMat

Advanced Materials Processing & Materials Engineering

From powder development to advanced materials characterisation — engineering solutions for academic and strategic industrial applications.

SYNTHESIS, CHARACTERISATION AND SHAPING

Available for collaboration

Powder, solution and suspension

— WHO WE ARE

A powder & materials laboratory at the University of Liège

GREEnMat is a research laboratory of the University of Liège specialised in functional materials — oxides, metals, alloys and hybrids — as powders, coatings or bulk solids. The team bridges fundamental research and industrial transfer across energy, environment and health.

The laboratory operates pilot-scale platforms rare in academia, including gas atomisation up to 2 100 °C, ATEX spray-drying and three complementary 3D-printing technologies... This integrated chain — from raw powder or solutions/suspensions to finished component — enables prototyping and validation at industrially relevant scales.

GREEnMat contributes to European sovereignty in critical materials through Horizon Europe projects on battery recycling and photovoltaic panel recovery, and explores functional oxides for applications such as multispectral camouflage. Patented technologies and long-standing industrial partnerships ensure research outcomes reach the market.

Metallic Powders · Advanced Materials · Powder & Films Processing · AM Feedstocks · characterisation & Testing

25
YEARS OF EXPERIENCE

25+
RESEARCHERS

10+
EUROPEAN PROJECTS

50+
INDUSTRIAL PARTNERS

— OUR DIFFERENTIATING EXPERTISE

Synthesis · Shaping · characterisation

01 Powder Production & Development

- Metallic powder atomization (up to 2 100 °C, including ATEX)
- Development of new alloy compositions
- Recycling & valorization of raw materials
- Tailor-made powders for specific processes
- Spray Drying powder production in normal or ATEX conditions

02 Materials Shaping

- Additive Manufacturing — materials-oriented (LPBF, Binder Jetting, SLA ceramic)
- Ultrasonic spray-coating for functional thin films & coatings
- Suspension & slurry formulation for tape casting & electrode fabrication
- Other powder-based forming processes

03 Advanced characterisation

- Granulometry & particle size distribution
- Morphology (SEM, optical, image analysis)
- Density, flowability & rheology of powders
- Chemical, structural & microstructural analyses

04 Thermal & Atmospheric Processing

- High-temperature sintering & debinding (up to 3 000 °C)
- Controlled-atmosphere treatments (H_2, N_2, Ar)
- Process optimization for density, phase purity & performance

05 Recycling & Circular Economy

- Direct recycling of Li-ion battery cathodes (NMC, LFP)
- Silicon recovery from end-of-life photovoltaic panels
- Metal powder reclamation from industrial waste streams
- Closed-loop strategies from end-of-life device to new material

— ACADEMIC & INDUSTRIAL APPLICATIONS

Materials for strategic sectors

- Advanced technical ceramics
- Customised metal powder production
- High performance soft Magnetic Powders (FeSi)
- Lightweight high-performance structures & robust
- Next generation battery materials
- Protective and Functional Coatings

— WHAT WE BRING

- Advanced synthesis and Processing
- Additive Manufacturing Excellence
- Pilot-scale capabilities
- Sustainability and strategic autonomy (recycling)
- Comprehensive characterisation

— WHAT WE ARE LOOKING FOR

- Collaborative partnerships
- Industrial Technology Transfer
- Project Challenges
- Refinement of end-use performance

OPEN TO INDUSTRIAL & ACADEMIC PARTNERS

From early-stage R&D to qualified powder supply

Let's discuss your strategic materials roadmap.

— FLAGSHIP EQUIPMENT

A complete platform Chemicals-to-part

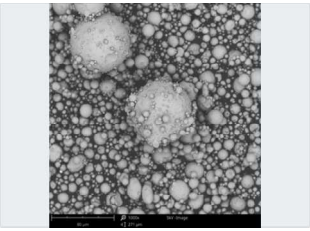
from powder, solution or suspension

Indutherm AUG 1000

Gas atomisation up to 2 100 °C

Spray Dryer Mobile Minor ATEX

Reactive-powder spray drying



SEM Imaging

Particle morphology & structure

Laminar Taylor-flow

Continuous chemical reactor

Sono-Tek ExactaCoat

Ultrasonic spray pyrolysis (USP)

GranuDrum

Powder flowability & cohesion

Aconity

Laser powder-bed fusion (L-PBF)

LIÈGE université

Greenmat

CONTACT ON SITE

Pierre Colson

GREEnMat – University of Liège

Pierre.colson@uliege.be

greenmat.uliege.be

Allée du 6 Août 13, 4000 Liège — Belgium

+32 (0)479 93 05 54

SCAN & CONNECT

greenmat.uliege.be

AVAILABLE FOR COLLABORATION

Synthesis, characterisation and shaping

Powder, solution and suspension