

KET*

Focus on (*) Key Enabling Technologies - nanotechnologies, advanced materials, advanced manufacturing and processing

360

INNOVATE TOGETHER

27th June 2019 - Strasbourg - FRANCE

Project idea/ Field of expertise:

Processing and characterization of structural & functional materials

Organisation Name:



UCLouvain

Institute of Mechanics, Materials and Civil Engineering
Division of Materials and process engineering (IMAP)

Adressed challenge(s)/ PPP(s):

3.1 Sustainable Process Industry
3.3 Clean Energy through Innovative Materials
3.5 Energy Efficient Buildings

Adressed topic(s) in Work Programme:

LC-NMBP-31-2020: Materials for off shore energy
LC-SPIRE-08-2020: Novel high performance materials and components

Division of Materials and process engineering (IMAP):

7 faculty members whose Profs **H. Idrissi, P.J. Jacques, T. Pardoen, A. Simar**
58 researchers, 13 administrative and technical staff
Ongoing EU projects: 6 FEDER and 1 ERC

Topics: High performance metallic, composite, and architected materials;
Advanced processing technologies (AM, FSW/FSP, gas atomisation); Thin films,
coatings, and MEMS design (within WINFAB UCL facility); Low-cost regenerative
batteries; Advanced characterization methods.

Cutting-edge equipment: in-situ electron-based microscopy, arc melters and lab-
scale atomizer, SLM, FSW/FSP, X-ray nano-tomography equipment, mechanical
testing

Strong collaborations with UCLouvain colleagues: Prof. L. Delannay (MEMA), Prof. G.
Kerckhofs (MEED), Profs C. Bailly, B. Nysten, J.C. Charlier, B. Hackens, G.M. Rignanese,
G. Hautier (IMCN), Prof. J.P. Raskin (ICTEAM)

Expertise we can offer

Materials Processing :

- Additive manufacturing of **home-made alloy composition through gas atomization**;
- **RTM press** for composite manufacture;
- **Casting metal** through several processes, **from few grams to 20 kg** (high entropy alloys, advanced steels, advanced Al alloys, Ti alloys);
- **Friction stir** based processes;
- **Thin films**, coatings and MEMS design in Winfab platform;
- **Material selection methodology** for, by instance, development of **architected materials**.

Materials Charaterization :

- Tribology (tribometer, low force mechanical testing, **scratch, wear, erosion and abrasion testing**);
- Mechanical testing (fracture mechanics, **fatigue testing**, temperature testing);
- Nanomechanical testing (Lab-on-chip, nanoindentation & nanoscratch, in situ tensile test);
- Advanced characterization methods (TEM, HRTEM & in situ TEM, **3D micro and nano x-ray tomography**, EBSD);
- Thermoelectric and other functional properties measurements (**Seebeck coefficient**, electrical conductivity, STA/DSC/TGA, thermal diffusivity)

Contact details

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