

# irCer



Work at the Institute of research for ceramics – IrCer – is devoted to the transformations of matter involved in processing of bulk ceramics and processing used in surface treatment. The laboratory activities are situating at the intersection of materials science – mostly ceramics – and process engineering.

Implanted in the new Aquitaine region at Ilmoges, the birthplace of the ceramic industry in France, the IRCER makes the link between tradition and modernity with its pursuit of innovation in the development of highly technical ceramics which answer the new challenges of industry and society (energy, information and communication technologies, health, ecomaterials...). The IRCER houses in a single building of 8500 m<sup>2</sup>, called the “Centre Européen de la Céramique”, all 200 members of the laboratory as well as the scientific equipment.

More about : [www.ircer.fr](http://www.ircer.fr)

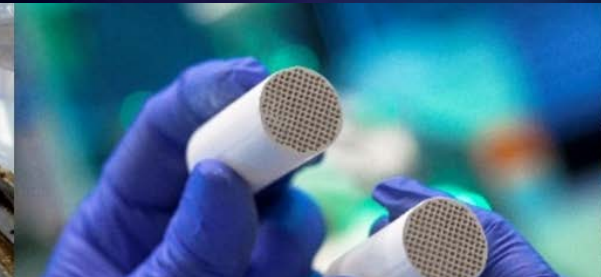
# irCer

## RESEARCH POSITION

**Ceramic additive manufacturing**

Hybridization of additive processes  
and development of new processes

Metrology for an artificial  
intelligence strategy



## Description

The "Ceramic Processes» team at IRCER is developing an integrated approach ranging from powder synthesis to the properties of use, including the shaping of objects and the modelling of consolidation processes. The objective is to control all the steps of the elaboration process in order to obtain a ceramic-based object with a controlled microstructure and architecture at all scales (nano, micro, macro) and adapted to a particular function(s).

Among the panel of processes studied for the shaping of ceramics, those involving additive numerical approaches are of growing interest. Indeed, beyond the «media hype», these 3D printing processes represent the pillars of the industry of the future. IRCER has been a precursor of ceramic 3D printing techniques with an anteriority of more than 25 years on these additive processes with laser stereolithography, inkjet printing and more recently micro-extrusion (robocasting). IRCER's activities transferred to local SMEs (3DCERAM, CERADROP) represent today about fifty highly qualified jobs that contribute to the influence of the entire ceramic industry. Our laboratory has thus acquired over the years a position of world leader in the field of additive manufacturing, a position that we wish to maintain and consolidate in a context of strong global competition. The request for a research officer position is in line with this objective.

The project of this research fellow will be to advance ceramic 3D printing technologies and associated feedstocks with a view to increasing the complexity and dimensional accuracy of the parts manufactured, whether in terms of architecture, microstructure or the combination of different materials.

For example, the main axes envisaged are:

1. The development of the hybridization of additive technologies (stereolithography, robocasting, inkjet printing, aerosol deposition).
2. The application of additive processes to improve the performance of energy production systems (SOFC, SOEC, PV...) or energy storage: control of the structure and microstructure of the multi-material cell material through the process.
3. The development of new approaches based on the exploitation of microfluidic devices.
4. The measurement of relevant quantities, during the construction of ceramic or multi-material parts, in order to feed databases for the implementation of an AI strategy, another development axis of the IRCER research strategy (junior professor chair).

## Offer Requirements

The recruited researcher will have a profile of physical-chemist of inorganic materials with a significant experience in digital manufacturing processes and/or ceramic processes...

### CONTACT

Pr. Arnaud Videcoq  
[arnaud.videcoq@unilim.fr](mailto:arnaud.videcoq@unilim.fr)

Dr. Pierre-Marie Geffroy  
[pierre-marie.geffroy@unilim.fr](mailto:pierre-marie.geffroy@unilim.fr)