Postdoc position

Processing of nanostructured dental ceramics from colloidal suspensions

Mateis is a Materials Science laboratory that encompasses different fields, namely chemistry, physics and mechanics. The MATEIS laboratory studies three classes of materials (metals, ceramics and polymers), and their composites, incorporating their characteristics by volume and surface and their interfaces.

The laboratory endeavors to describe how development, microstructure and properties are linked together by way of experiments and/or modelling. MATEIS is involved in advanced processing methods, microstructural characterization, often in situ and/or 3D, modelling at different levels and characterization of properties and use. We are currently studying multifunctional materials for the health, energy and transport/building sectors.

Mathym is a nanotechnology company dedicated to the development, manufacturing and commercialization of nanomaterials in the form of colloidal solutions. It is specialized in the field of biomedical applications by developing innovative nanomaterials entering new medical devices formulations, such as dental or bone-substitute materials. The company is based at Champagne-Au-Mont-D'Or, next to Lyon, and is built around strong collaborations with industrial players and academics (ENS of Lyon and INSA of Lyon).

Context: in the framework of the development of a novel nanostructured ceramic dental material, Mateis and Mathym offer a full-time postdoc position for a motivated researcher with a PhD in material science/engineering and with a demonstrated knowledge about technical ceramics. The selected candidate will be dedicated to applied research activities, having a key role in the material development and characterization.

Start date/duration : September or October 2017/ 12 months renewable.

Location: Villeurbanne/Champagne-au Mont d'Or, next to Lyon (FR). Occasional missions out of the region for workshops, meetings and conferences.

Mission:

- Feedstock development.
- Shaping of samples by traditional and innovative techniques, including additive manufacturing.
- Study and optimization of post-processing and densification process.
- Multi-scale characterization of the obtained materials.
- Find innovative solutions to the challenges of processing nanostructured materials.

Required skills:

- Knowledge of ceramic suspensions/colloids behavior, control of stability, additives employed in its formulation to control its stability and facilitate shaping and post-processing.
- Knowledge of the rheological behavior of concentrated suspensions.
- Processing of technical ceramics, especially in terms of shaping, drying, debinding, sintering.
- Ceramic sample preparation.
- Characterization techniques: dilatometry, porosimetry, mechanical testing, optical properties, micro-CT, XRD, optical microscopy.
- Experience with electron microscopy (SEM/TEM).
- Knowledge of additive manufacturing technologies applied to ceramics is a plus.
- Being familiar with regulatory constraints applied to biomaterials would be appreciated.

Contacts:

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