Post-doc Position in Switzerland

Investigation of the casting and hot deformation behaviour of a new copper alloy for the watchmaking industry

SCIENTIFIC PROJECT

The copper-beryllium Cu-Be alloys demonstrate fantastic mechanical performances among copper alloys; in particular, the combination of their high shaping capacity with their high mechanical resistance makes them a primary choice for many watch components. In addition, Cu-Be alloys also benefit from non-magnetic properties and have good tribological properties. Extremely versatile, they are used for instance for balances, bearings, sprockets, wheels, teeth, studs, screws or springs. Despite these excellent properties, the use of Cu-Be is progressively forbidden in watches because of the toxicity of Be vapours during the early steps of the metallurgical process. Therefore, there is an urgent need to investigate and develop alternative alloys.

Supported by the major watchmakers in Switzerland, the ASRH (Association Suisse de Recherche Horlogère) is launching a strategic project open to the entire Swiss watchmaking industry, which is committed to the search for alloys to replace CuBe: https://www.asrh.ch/projets/projets-strategiques/. In this context and collaboration with the ASRH, the EPFL metallurgical laboratory LMTM is opening a post-doc position to investigate the casting and hot deformation of behaviours of an alternative copper alloy.

Research efforts have been recently conducted in LMTM and showed relevant properties of a new alternative copper alloy (https://doi.org/10.1016/j.matdes.2021.110340) for watchmaking applications.
RESPONSIBILITIES

- Investigate the casting ability and the hot deformation behaviour of a new copper alloy.
- Propose tailored metallurgical routes for the fabrication of extruded parts.
- Design, carry out and analyse significant experimental campaigns.
- Work in a multicultural environment and collaborate with several international industrial partners.
- Communicate and explain the results to the partners.
- Write reports

PROFILE

- PhD in materials science (metallurgy). An experience in hot deformation of metals is a plus.
- Autonomous and curious.
- Good communication and popularization skills
- Rigorous and methodical
- Speaking French and English is necessary

LOCATION

The work will be performed at Ecole Polytechnique Fédérale de Lausanne (EPFL) in the Laboratory of Thermomechanical Metallurgy LMTM led by Professor Roland Logé, at Microcity in Neuchâtel. LMTM has important activities in thermomechanical behaviour and additive manufacturing of metallic alloys. 40 minutes by train from Lausanne, Neuchatel is a town of 34,000 inhabitants with an active student life, where you can enjoy a beautiful lake and a lovely view of the Alps.

JOB CONDITION

- Time: one year (end of 2022, 2023).
- Occupation: Full-time.
- Salary: 83 000 – 90 000 CHF a year (with tax).

CONTACTS

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