In the context of the Horizon 2020 call NMBP-TO-IND-2018-2020 (FOUNDATIONS FOR TOMORROW’S INDUSTRY) under the topic DT-NMBP-09-2018 (Type of action: IA) the proposal SimDOME (Digital Ontology-based Modelling Environment for Simulation of materials) was approved with starting date January 1st 2019.

The Department of Applied Science and Technology (Institute of Chemical Engineering) of Politecnico di Torino (Torino, Italy) is a partner of the project and mainly responsible for the development of computational models, based on computational fluid dynamics and population balances, for the simulation of precipitation/crystallization processes of precursors (NMC, nickel-manganese-cobalt hydroxides) for lithium batteries. The research work is done in collaboration with Umicore (Belgium) a world-leading company in this field.

The Multiscale Modelling Group (part of MuSyChEn):

http://www.disat.polito.it/research/research_groups/musychen/multiscale_modelling_for_materials_science_and_process_engineering

is seeking two candidates for post-doc positions (assegni senior) for 36 months each, with starting dates within the first 12 months of the project (from January 1st to December 31st 2019).

Suitable candidates for these positions should hold a PhD degree in Chemical Engineering or similar fields and have previous experience in computational fluid dynamics. OpenFOAM and Ansys Fluent will be mainly used within the project. Experience in population balance and multiphase flow modelling is preferable, but not mandatory. Candidates should have excellent programming skills (especially in C++ and python) and excellent (written and oral) communication skills (in English).

The research work will involve:

- Improvement of existing models for the simulation of precipitation/crystallization processes of precursors for lithium batteries
- Improvement of existing implementations of the models in OpenFOAM and Ansys Fluent
- Coupling of the existing models with other computational tools for the simulation of aqueous solutions and electrolyte chemistry (e.g. OLI software/database)
- Integration of the models and codes (with an ontology-based approach) into the multiscale open simulation platform (OSP) SimDOME to be developed during the project
- Orally presenting the results at project meetings and international conferences, preparing written reports for the projects and papers for international journal

The Multiscale Modelling Group is a world-renowned research group, with an excellent international standing and reputation. It is a friendly, collaborative and stimulating work environment. The project offers the perfect mix of academic research and industrial exploitation and is therefore suitable to both candidates willing to seek future positions in the industry or building a career in the academia.

The net salary is approximately 2000 € per month for the first year, 2100 € for the second year and 2200 € for the third year. Life in Torino is quite affordable (a studio-apartment can cost 500 € per month) and more information is available on the cost of life at this link: https://www.numbeo.com/cost-of-living/in/Turin.

Candidatures should be sent to: daniele.marchisio@polito.it.