UNIVERSITÉ CÔTE D'AZUR

European PhD fellowship

Nuclear Chemical Toxicology : Understand, Model, Explain

Supervisors :

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International partners : **Johannes Raff, Satoru Tsushima**, Researcher, Helmoltz Zentrum Dresden Rossendorf, Ger.; **Michael Kumke**, Professor, University Potsdam, Ger.

Whether nuclear energy is being used as a source of energy or for other applications, it is subject to controversy: it tends to feed fears and diverse conspiracy theories at diverse scales. Behind those fears, risks in human contamination in case of an unprevented event are being questioned and the toxicology of plutonium in particular is a scientific challenge and a social stumbling block. The objective of this PhD thesis is double : better understand and model a specific Pu-protein interaction involved in human nuclear toxicology; question how scientific knowledge impacts public opinion on nuclear safety and as a result, how this modulates risks and crises management. On the biochemistry side, a model protein (phosvitin) will be selected and basics of plutonium-protein interaction mechanisms will be explored. On the sociology side, a parallel will be drawn between fundamental research in this field and public perception through the elaboration of a public survey on nuclear toxicology.

The PhD student will work with phosvitin protein that is an interesting phosphorylated model to understand interactions with plutonium. This will involve understanding its role in cell metabolism in collaboration with Dresden Rossendorf Institute and assessing its bio-inorganic chemistry using several spectroscopic techniques in collaboration with Univ. Potsdam and European synchrotron in Grenoble. The very original part of the project is that the student will also be involved in the elaboration of a public survey on nuclear toxicology because he will become the "scientific expert" of this field. This survey will be diffused to all Université Côte d'Azur students.

The PhD candidate will be localized mainly at Université Côte d'Azur in Nice at the Institut de Chimie de Nice in close collaboration with ESPACE laboratory and Rescuers from Alpes Maritimes. Secondments (a total of 6 months) are also foreseen at Rossendorf Institute in Dresden with J. Raff for biochemistry and at Univ. Potsdam for laser spectroscopy. Spectroscopic experiments will also be carried at the European synchrotron in Grenoble.

The PhD student should have a master in molecular inorganic chemistry or bio inorganic chemistry. A training in radiochemistry would be advantageous but is not compulsory.

Aplication until March 15th, 2020
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