



WE ARE HIRING

## Post-doctoral researcher position :

### Sputtering Onto LiqUids for the synThesis of Nanoparticles (SOLUTIoN)

Methods to synthesize nanoparticles (NP) can be classified as physical and chemical. Both routes offer advantages and disadvantages. The method based on the sputtering of a metal target by cold plasma ions to produce a vapor of metal atoms which interact with the surface of a liquid substrate seems to combine the best of both worlds.

This research project first aims at contributing towards the better understanding of the interaction of sputtering plasmas with liquid substrates and to unravel the formation mechanism of the NP. For instance, we have chosen titanium nitride (TiN) NP as a model system. In the field of magnetron sputter deposition of functional thin films (on solid substrates), TiN coatings are studied for several decades. Today, TiN NP are proposed to replace gold NP in various applications because they are cheaper, exhibit excellent plasmonic properties, have higher stability, ... In the frame of this basic science study, we will gradually increase the level of complexity of the experiments and vary systematically the working conditions to change the plasma energetics and chemistry as to modify its interaction with the liquid medium.

We also aim to combine the experimental data with molecular modelling and simulation works (collaboration with colleagues at UMONS) to understand how the plasma characteristics influence the NP physical properties. A post-doctoral researcher will undertake this research project for a duration of 2 years.

The researcher has a PhD in chemistry, materials science or related field and proven record of success with multiple peer reviewed publications in synthesis and characterization of nanoparticles in solution. Having also an experience in quantum-chemistry based calculations is an asset. The researcher must be autonomous and creative, have strong written and oral communication skills, and capable to work in an international environment.



Regarding the hiring, some conditions apply. The post-doctoral fellow must be in a situation of international mobility. S/he must hold the academic degree of doctor obtained after defense of a thesis at the latest on the hiring date. S/he must be experiencing an international scientific mobility and hence may benefit from a postdoctoral grant from the hosting university. This grant will be exempted from taxes but subject to the employee social security. The researcher who is experiencing an "international mobility" shall not have resided or carried out his/her main activity (job, studies...) in Belgium for more than 24 months during the last 3 years directly before the first stay as a Postdoctoral fellow. The first hiring period shall start at the latest exactly 6 years after obtaining the academic degree of doctor, after defense of a thesis. The hiring will be carried out between 1st January and 30th June 2019. The sooner, the better.

Contact : If you are interested in the project, please contact [stephanos.konstantinidis@umons.ac.be](mailto:stephanos.konstantinidis@umons.ac.be) along with your CV and a letter of motivation.