**Job description:**

We are looking for a motivated PhD candidate to participate in the building and exploiting of a powerful surface-sensitive heterodyned Sum Frequency Generation (SFG) spectrometer, for studying the photocatalytic (PC) water splitting activity of the novel family of Metal-Organic Frameworks (MOFs).

This PhD project, which will take place at the IMDEA nanoscience institute in Madrid, in the group of “Nonlinear Bulk and Interfacial Molecular Dynamics”, integral to the “Cesar Nombela” project from the community of Madrid, is dedicated to the development of the first SFG spectrometer in Spain and its application on studying in-situ and in the molecular level the potential of MOFs to complement or even substitute traditional solid-state materials in water splitting applications.

MOFs are hybrid and highly versatile materials consisting of metal centers, connected with organic linkers. Families of MOFs showing (semi) conductive behavior are nowadays considered one of the most promising materials for applications where long-range charge transport is needed, including PC, due to their many favorable properties, like their world-record surface area, porosity, tunable bandgap, etc. Understanding in the molecular level the interactions taking place at the MOF/water interface, where the water splitting processes mainly take place is a crucial step to catalyze their implementation to devices.

**Candidate Profile:**

We seek applications from motivated early-stage researchers with a strong background in molecular chemistry, spectroscopy, applied physics, physical chemistry or other closely related areas.

Knowledge of programming languages like Matlab, Python, etc. is advantageous. The candidates are expected to thrive in an international environment and be excellent team players. For this reason, elevated English writing and spoken skills are demanded.

Moreover, willingness to participate in outreach activities, conferences and international meetings is highly valued.

**Application:**

To apply for the position, please send an e-mail to: vasileios.balos@imdea.org, stating your name and a brief introduction of yourself and include:

* A detailed CV.
* An academic transcript of your BSc and MSc education, including your grades.
* A one-page motivation latter.
* Contact information of at least two academic references who are willing to provide recommendations upon our request.

**What we offer:**

* Full time position of three years, with a qualifier in the first six months and a possibility for up to one year extension, upon evaluation.
* Gross salary will be according to standard regulation in Spain at IMDEA Nano.
* 30 calendar days annual leave with additional days off during Easter and Christmas holidays
* Access to novel research facilities, including our ultrafast laser labs and our top-notch chemistry labs.
* Excellent mentorship and a multicultural environment.
* Involvement with our ultrafast spectroscopy branch at IMDEA and exposure to other research lines and techniques.
* Participation in conferences, summer schools and international meetings, as well as scientific visits and stays to our partners labs in the Max Planck Society in Germany (Berlin and/or Mainz).

**About IMDEA nanoscience:**

IMDEA Nanoscience is a non-profit Foundation created on 2006 in order to shorten the distance between the research and society in the Madrid region and provide new capacity for research, technological development and innovation in the field of Nanoscience, Nanotechnology and Molecular Design. It is essentially a new and quickly developing interdisciplinary research Centre dedicated to the exploration of nanoscience and the development of applications of nanotechnology in connection with innovative industries. The IMDEA Nanoscience Institute is part of one of the strategic lines of the Campus of International Excellence (CEI) UAM+CSIC.