

## Master Thesis: Metal-organic frameworks biocomposites for SARS-CoV-2 detection

We are looking for master students interested in the synthesis and characterization of **metal oxide nanostructures, metal-organic frameworks (MOFs)** and **MOF-based biocomposites**.

**The project.** “SARS-CoV-2 Multi-Messenger Monitoring for Occupational Health & Safety” (SARS 3M) is a joint project by TU Graz and Sapienza University (Rome, Italy) aimed to join forces to strengthen health and safety in response to new challenges posed by the COVID-19 global pandemic. SARS 3M is developing innovative nanotechnology-based platform to monitor the SARS-CoV-2 virus and other toxic bio-agents in the workplace. By fusing the advanced nanotechnology-based platforms (i.e. Metal-organic Frameworks, MOFs) and high-sensitivity vibrational spectroscopy, we are developing a versatile, fast and economic tool with high sensitivity and selectivity to enhance protection from and prevention of viral infection spread. MOFs have demonstrated unprecedented properties suitable for applications in protection and delivery of biopharmaceuticals, biosensing, biocatalysis, and cell and virus manipulations. At TU Graz, the group of Prof. Falcaro is focusing on the preparation Metal-organic frameworks (MOFs) biocomposites and their integration into vibrational spectroscopy based bio-agents detectors.

**Objectives.** The master thesis will be framed in the context of the SARS 3M project. The thesis will tackle specific tasks within the project. One example is the possibility of focusing on the integration of biomacromolecules in MOFs. Another example is the development of experimental set-ups for the preparation of metal oxide nanostructures. Further details can be discussed upon appointment.

**Financing.** 6 months “Forschungsbeihilfe im Rahmen einer Studienausbildung” positions funded by the SARS 3M project (NATO Science for Peace and Security programme, 400€/month).

**Desired starting date.** ASAP and/or September 2022.

**Contact.** Prof. Paolo Falcaro, [paolo.falcaro@tugraz.at](mailto:paolo.falcaro@tugraz.at), Institute of Physical and Theoretical Chemistry.

