

## Postdoctoral Research Associate position in Photodynamic Therapy – Time-Resolved Spectroscopy offered at IQS-Universitat Ramon Llull (Barcelona)

### Description

IQS offers a Postdoctoral Research Associate (PDRA) position to work on the H2020 FET-Open project Light4Lungs ([www.light4lungs.eu](http://www.light4lungs.eu)).

We are seeking a highly motivated and talented scientist to investigate the photosensitised production of singlet oxygen in the bacteria causing lung infections. In particular, we will define the parameters that control the production of singlet oxygen using persistent-luminescence particles for the activation of bacterial endogenous photosensitisers.

The position is available from September 2021, full-time and tenable for 2 years, extendable to 2.5 years.

IQS has adhered and is implementing the Human Resources Strategy for Researchers (HRS4R), in agreement with the recommendations and principles established by the European Commission in the European Charter for Researchers & the Code of Conduct for their Recruitment.

We are committed to equality of opportunity, to eliminating discrimination and to creating an inclusive working environment for all. We therefore encourage candidates to apply irrespective of age, disability, marriage or civil partnership status, pregnancy or maternity, race, religion and belief, gender identity, sex, or sexual orientation.

### Research topic

Light4Lungs proposes a novel approach to address the problem of antimicrobial resistance in the treatment of chronic lung infections, which are the leading cause of morbidity and mortality in patients with diseases such as cystic fibrosis and hospital-acquired lung infections. The goal is to develop a novel therapeutic scheme, replacing antibiotics by **inhalable light sources** that will excite bacterial endogenous photosensitizers (e.g., iron-free porphyrins), eliminating the pathogenic bacteria by the **photodynamic effect** (local production of cytotoxic reactive oxygen species by the combined action of light, a photosensitiser and oxygen) irrespective of its multidrug resistance profile. The aim is to have a safe treatment for the host tissue thanks to its lack of self-photosensitising ability.

The task assigned to the PDRA is to study the production of singlet oxygen in bacteria exposed to the light emitted by the persistent luminescence particles. To this end, the successful candidate will have to implement **novel spectroscopic techniques** to detect singlet oxygen, ranging from near-infrared phosphorescence detection to the use of fluorescent probes, as well as transient absorption techniques to detect intermediates formed upon exposure of the bacteria to light.



## Position requirements

- Hold a PhD (or equivalent qualification) in Physical Chemistry, Physics or Biophysics.
- An interdisciplinary background, involving Physical Chemistry (or Physics/Biophysics) and Photodynamic Therapy (or Photopharmacology) and or Microbiology.
- Experience in operating time-resolved spectroscopy systems, particularly laser flash photolysis, time-correlated single photon counting, and bio- or chemiluminescence spectroscopy. Previous experience in time-resolved singlet oxygen phosphorescence detection will be given special consideration.
- The ability to set up spectroscopic experiments, from the design of the optical setup to computer programming of instrument control and data acquisition (LabView or similar).
- Good oral and written communication skills in English.
- The ability to work both independently and as part of a team.

## Offer

- You will be part of a European H2020 FET-OPEN project, with several academic and industrial partners.
- You will work in a multidisciplinary environment in the fields of photochemistry, photobiology, nanoscience, and microbiology.
- A remuneration package competitive with academic standards in Spain, a country with a high quality of life and excellent health care system.
- Ample occasions to develop yourself in a scientific and/or an industrial direction. Besides opportunities offered by the research group, further doctoral training for PhD candidates is provided in the framework of the IQS-URL PhD program in Chemistry and Chemical Engineering
- A stay in a vibrant environment in world-renowned Barcelona.

## Application deadline

August 31, 2021, or until the position is filled

## Application documents

Candidates are encouraged to send the following documents in a single PDF file:

- (1) CV including their academic record and work experience
- (2) A motivation letter addressing the position requirements
- (3) Two names and e-mail address of scientists/professors willing to write a reference letter.

## Further information

If you would like more information about the position, please contact Professor Santi Nonell ([santi.nonell@iqs.url.edu](mailto:santi.nonell@iqs.url.edu)).



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