

POSTDOCTORAL POSITION (FTMC)

Project Title: CdSe Quantum Dots in Molecularly Imprinted Polymer Matrices: A Prototype Surface for Electrochemical Diagnostics

Institution: Center for Physical Sciences and Technology, Department of Nanotechnology

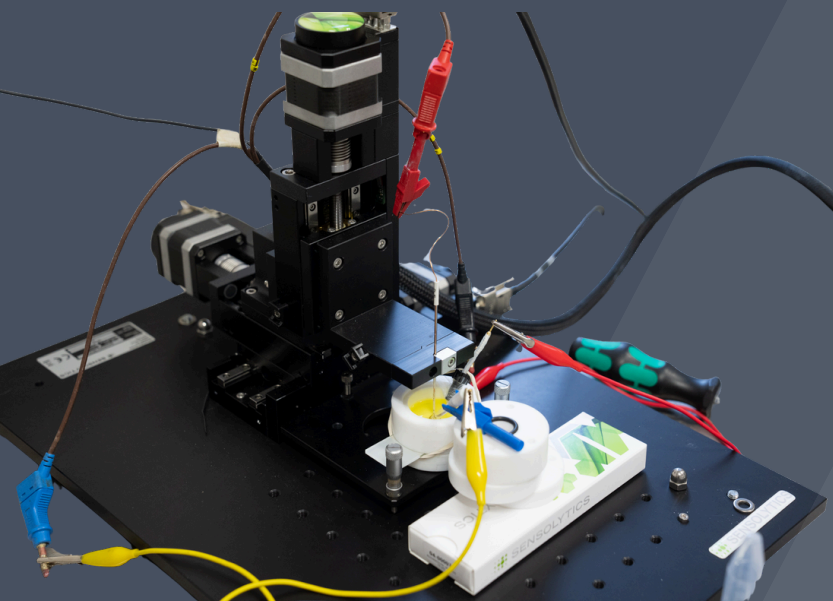
Location: Vilnius, Lithuania

Duration: 2 years

Start date: No later than 01 May 2026

Gross Salary: €3,142/month

Interested? Please contact: urte.prentice@ftmc.lt



Position Overview

The project focuses on developing a prototype electrochemical diagnostic surface based on molecularly imprinted polymer (MIP) matrices modified with CdSe quantum dots, using dopamine as a model analyte.

The research aims to understand how integrating semiconductor quantum dots into electropolymerised MIP layers influences interfacial properties, charge-transfer processes, and electrochemical signal enhancement during selective molecular recognition. The work emphasises surface architecture design rather than fabrication of a finished sensor device.

The successful candidate will contribute to the fabrication, characterisation, and optimisation of layered MIP–quantum dot hybrid interfaces using electrochemical techniques (CV, DPV, EIS) and controlled electropolymerisation methods.

Requirements for a postdoctoral fellow:

1. PhD in Electrical/Electronic Engineering, Materials Science, Nanotechnology, Chemistry (Physical, Analytical, Polymer), Biomedical Engineering, or related field
2. Demonstrated experience in at least one core area:
 - Electrochemical sensors
 - Molecularly imprinted polymers (MIPs)
 - Nanomaterials synthesis (preferably semiconductor quantum dots)
 - Functional polymer or hybrid materials

Mandatory Skills

- Strong hands-on experience with electrochemical techniques (CV, DPV, EIS)
- Practical experience in electropolymerisation or functional polymer synthesis
- Ability to independently operate laboratory instrumentation (potentiostat/galvanostat, spectroscopic tools)
- Solid competence in experimental design, quantitative data analysis, and scientific writing

Desirable Skills

- Experience in electrochemical analyte detection or biosensor platforms
- Familiarity with multilayer polymer systems or nanocomposite materials
- Background in surface modification of electrodes
- Experience in interdisciplinary research projects
- Established publication record in peer-reviewed international journals

Other Relevant Information

The Postdoctoral Fellow will be actively engaged in experimental research, including laboratory synthesis, surface fabrication, electrochemical characterisation, and analytical performance evaluation of prototype interfaces. The role involves developing reproducible fabrication protocols, analysing interfacial charge-transfer behaviour, and contributing to optimisation of hybrid polymer–quantum dot systems.

The position offers participation in advanced research at the intersection of nanotechnology, electrochemistry, and functional materials engineering. The Fellow will have access to modern laboratory infrastructure and advanced characterisation equipment, and will collaborate with experienced researchers within a multidisciplinary scientific environment.

The candidate is expected to demonstrate the ability to design and execute independent research tasks while contributing effectively to collaborative projects. A strong publication record relevant to electrochemical materials or nanostructured systems will be considered an advantage.

You will find more information about FTMC [here](#).