

## Education

- 05/2013 **Ph. D. [Physics]**, *Ruhr-Universität*, Bochum.  
-06/2018 Thesis: Resolving the Interaction of Biomolecules and Water under Ambient and High Pressure Conditions by THz Spectroscopy  
10/2010 **M. Sc. [Physics]**, *Ruhr-Universität*, Bochum.  
-04/2013 Specialization: Hadron Physics, M.Sc. Project: Development of a HF Measurement System (NMR) for the Detection of Polarization  
10/2007 **B. Sc. [Physics]**, *Ruhr-Universität*, Bochum.  
-09/2010 B.Sc. Project: EPR Spectroscopy as a Tool to Determine the Spin Density of Polarizable Solid State Targets

## International Experience

- 04/2016 **Ph. D. Internship**, *Stockholm University*, Stockholm.  
-06/2016 XSoLaS Research Group: X-ray Science of Liquids and Solids - Prof. Dr. Anders Nilsson  
09/2011 **ERASMUS Exchange Programme**, *Université Paris-Sud*, Paris.  
-12/2011 Master Programme NPAC - Noyaux, Particules, Astroparticules, Cosmologie

## Experience

### Research

- 11/2019 - **Assegno di Ricerca**, *Department of Chemical and Pharmaceutical Sciences, Università di Trieste*, Trieste.  
present Main duties: Characterization of nanobodies for the use in AFM-based assays and for the development of electrochemical biosensors based on the conjugation of DNA and development of these approaches towards clinical applications  
09/2018 - **Assegno di Ricerca**, *AREA Science Park*, Basovizza.  
09/2019 Main duties: Development of an electrochemical biosensor for the detection of biomarkers (antibodies with clinical or diagnostic properties) in whole blood

### Acquired competences:

- Sample preparation and characterization
  - Handling of biological materials
  - Participation in the development and characterization of protein-based biosensors, also using ELISA
  - Preparation of DNA monolayers to study DNA-hybridization
- Electrochemical Impedance Spectroscopy (EIS)
  - Non-Faradaic and Faradaic measurement of impedance
  - Analysis of impedimetric data by means of equivalent circuits
  - Optimization of non-Faradaic approaches
- Atomic Force Microscopy
  - Characterization of electrode surfaces (NT-MDT)
  - Characterization of functionalized ss-DNA monolayers and ds-DNA monolayers after hybridization using nano-shaving (Park Instruments XE-100)
- Production of Microelectrodes in Clean Room
  - Spin coating
  - UV-lithography using mask-aligners
  - Evaporation of gold (e-beam evaporator)
  - Plasma treatment of surfaces
- Cooperation in a project involving research-driven (Elettra NanoInnovation Lab) and commercial (Ulisse BioMed) partners

05/2013 - **Research Assistant**, *Physical Chemistry II. Ruhr-Universität*, Bochum.

05/2018 Main duties: Development and establishment of new spectroscopic setups in an FTIR (THz) lab, analysis and interpretation of complex spectroscopic data, transfer of knowledge to students.

Acquired competences:

- Maintenance and handling of spectrometer equipment, high pressure and high temperature technology
- Development and commissioning of new measurement cells, i.a. Diamond Anvil Cells
- Handling and preparation of biological, biochemical and chemical samples
- Microscopy, photometry, densitometry as complementary techniques for sample characterization
- Application for and organization of beam time at AILES, SOLEIL, Paris
- Participation in a structured graduate program (Graduate School Solvation Science)

04/2016 **Internship**, *Chemical Physics, XSoLaS Group, Stockholm University*, Stockholm.

- 06/2016 Main duties: Preparation for and participation in measurements at APS, Argonne (IL), USA

Acquired competences:

- Fundamental insights into the use of X-rays for structural and dynamical studies
- Course **Practical IR and Raman Spectroscopy** by Prof. Dr. János Mink

04/2011 **Student Research Assistant**, *Experimentalphysik I, Physics of Hadrons and Nuclei*,

- 02/2013 *Ruhr-Universität*, Bochum.

Main duties: Assistant and preparatory tasks in laboratory experiments

Acquired competences:

- Handling of cryogenic (ultra-low temperature) and vacuum equipment
- Fundamental knowledge of NMR and EPR spectroscopy
- Planning and testing of sensitive HF electronics

### Administrative

09/2014 **Ph.D. Student Representative**, *Early Career Research Board and Graduate School of Solvation Science Board*.

- 09/2016 Main duties: Coordination and organization of workshops, extracurricular activities and the annual summer school, management of funding, counselling and mediating tasks

### Teaching

Tutorials Physics for non-physicists, Physics for engineers, Physical chemistry III

Lab courses Fundamental practical course: Physical chemistry, Lecture on EIS-based biosensors

Mentoring 3 M.Sc. and 2 B.Sc. theses

## Computer skills

Intermediate Matlab, Igor, Gwyddion, Microsoft Windows, OpenOffice, Corel Draw

Advanced Mathematica, LabView,  $\text{\LaTeX}$ , Linux

## Languages

- German [Mother tongue]
- English [Professional]
- French [Upper Intermediate, *DEL F B2*]
- Italian [Upper Intermediate]
- Dutch [Upper Intermediate, *CNaVT PTHO*]