NAME SURNAME Igor Píš

WORK EXPERIENCE

2019 – Present

Researcher, Beamline scientist

Consiglio Nazionale delle Ricerche, CNR - Istituto Officina dei Materiali (IOM), BACH beamline, Synchrotron Elettra, Trieste, Italy, www.iom.cnr.it

Main activities and responsibilities

- Materials Science, characterization of the chemical and electronic properties of surfaces and interfaces, study of surface reactivity, catalytic and photocatalytic processes by means of synchrotron-radiation based spectroscopies available at the BACH beamline; data analysis and manuscript preparation
- Sample preparation with surface-science methods in ultra high vacuum chambers
- Participation in further experimental activities in collaboration with external users of the BACH beamline or during in-house research
- Support in the maintenance of the experimental chambers and the research instrumentation, software implementation and development

2013 – 2019

Researcher, Beamline scientist

Elettra Sincrotrone Trieste, Italy, BACH beamline, www.elettra.eu

Main activities and responsibilities

- Running and further developing the BACH beamline and experimental stations in order to accomplish the experimental program. Research activities expanding Elettra collaborations on material sciences
- Providing support to external users
- Pursuing research in the field of tailored 2D materials and C-layers for novel catalytic materials and green chemistry

2009 – 2010

Guest Researcher

National Institute for Materials Science (NIMS), Synchrotron SPring-8, Japan

Main activities

Development of laboratory based system for photoemission spectroscopy induced by hard X-rays (HAXPES)

EDUCATION

2007 – 2013

Ph.D. in Physics

EQF 8

Charles University in Prague, Faculty of Mathematics and Physics, Department of Surface and Plasma Science, Czech Republic

Principal subjects: Surface and interface physics
Thesis title: Electronic structure of bimetallic systems - study of gas molecule interaction

2002 – 2007

Master's degree in Physics

EQF 7

Charles University in Prague, Faculty of Mathematics and Physics, Czech Republic

Principal subjects: Physics of surfaces and thin layers, Physics of condensed matter, Vacuum physics

PERSONAL SKILLS

Languages

English – fluent with good writing skills
Italian – conversation level
Slovak – mother tongue

Job-related skills

- More than 12 years' experience of working at **synchrotron radiation facilities** (Elettra, Italy; SPring-8, Japan; Bessy, Germany)
- Expert knowledge **of X-ray spectroscopy techniques** and related instrumentation (resonant, angle-resolved, diffraction photoemission spectroscopy, soft X-ray absorption spectroscopy, time-resolved pump-probe XAS)
- Expert knowledge of **vacuum physics and technology**, including vacuum pump systems design and maintenance and UHV surface science equipment design and construction.
- Good command of other **surface sensitive techniques for materials science** (SEM, EDX, LEED, SIMS, STM, ISS, Mass spectroscopy, Thermal-desorption spectroscopy)
- Good command of **laser optics**
- Broad knowledge of the **LabVIEW** environment, with experience in developing control systems for scientific instruments and data acquisition systems. This includes beamline positioning and motorisation systems, controlling the experimental environment, and integrating new instruments into existing control systems. Completed Base and Advanced Labview training courses organized by Sinctrotrone Elettra.
- Programming in **Python**, Certificate of participation in the training course Python for scientific data management organized by CNR.
- Good command of **computer simulations for X-ray optics** (ray tracing with ShadowOui-OASYS), applied to changes in beam spot size induced by thermal-induced optical surface deformations.
- Advanced command of **scientific data analysis** software, such as Igor Pro and KolXPD. Development of advanced procedures for spectroscopic data processing and analysis.

ADDITIONAL INFORMATION

Publications

- Author or co-author of **117 articles** published in peer-reviewed scientific journals
- h-index: 23 (Web of Science, as of 25-06-2025)

Peer review
Conferences

Langmuir, App.Surf. Sci,, App.Phy.Let., Nanotechnology, JPCC, and others
Presentations of the scientific results at international conferences and workshops.

Recent projects

- 2024 – present: PRIN 2022 Noble metals free hierarchical Catalysts and electrocatalysts engineering: in-operando multitechnique approach (ECLIPTIC), co-investigator
- 2023 – present: Project 2D materials Integration with Nitride semiconductors for advanced Electronics, co-investigator
- 2020 – 2022: Joint research project (CNR-SAS, Italy-Slovakia): Transition metal dichalcogenide thin films and novel heterostructures for application in electronics and advanced sensors
- 2014 – 2017: Beyond graphene – Tailored C-layers for novel catalytic materials and green chemistry, FIRB futuro in ricerca, MIUR, co-investigator

Research areas

Surface science of catalysis, 2D layered materials and assembling, Surface nanotechnology and devices, Chemistry of deposition and growth, Surface science applied to energy conversion and storage

REFEREES

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