

**Dr. Muhammad Shahid Arshad, PhD**

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**Nationality:** dual (Pakistan and Slovenia)

**DOB:** 05-Feb-1985

**Personal websites:**

My webpage: <https://shahidarshad85.wixsite.com/myprofile>

<http://izumbib.izum.si/bibliografije/Y20171003145740-A218964835.html>

<https://scholar.google.com/citations?user=N1VEbFAAAAAAJ&hl=en>

**Education**

Jan 2018-present	<b>Researcher at Laboratory for Tribology and Interface nanotechnology, University of Ljubljana, Slovenia.</b>
February 2016-Oct 2017	<b>Research Assistant at Department for Environmental Sciences and Engineering, D05, Kemijski inštitut, Ljubljana, Slovenija</b>
	<b>PhD in Nanoscience and Nanotechnology, Department for Nanostructured Materials, Jozef Stefan Institute, Ljubljana, Slovenia</b>
Dec 2011 – Jan 2016	<u>Thesis title:</u> <i>Magnetization distribution and reversal behaviour in 1D Co-Pt-based nanostructures.</i>
Sept 2008 – May 2011	<b>M.Sc Applied Physics, Royal Institute of Technology (KTH), Stockholm, Sweden</b>
Jan 2004 - July 2008	<b>B.Sc (Hons) - Physics, Punjab University, Lahore, Pakistan</b>

**Overview of Research impact**

The major contributions achieved are:

- **high quality international peer reviewed journals articles: 11 published**

- **conference oral/poster presentations in national/international**  
**venue: 28**
- Research collaborations with 4 international partners

### **Participation in national and international projects**

1. Nanostructured materials, Project Number: PR-04442, National Research Programme (2009-2014), Principle investigator: Prof. Spomenka Kobe, (my contribution is listed on my webpage in articles number, 4,5,6,7,8,10 and 11)
2. Bio-responsive magneto-optically coupled nanomaterial-based systems for innovative skin cancer treatments, Project number: J2-6760, Basic Research (2014-2017), Principle investigator: Asst. Prof. Saso Sturm, (my contribution is listed on my webpage in article number 9)
3. Integrated approach to water pollution prevention (1.1.2014 - 31.12.2019), Project Number: P2-0150, National Research Programme (1.1.2014 - 31.12.2019), Principle investigator: Prof. Albin Pintar (my contribution is listed on my webpage in article number, 1, 2 and 3)

### **List of internships abroad**

1. 4 months internship (scientific visit) to IFW-Dresden, Institute for Metallic Materials, P.O. Box 270116, D-01171 Dresden Germany. During this scientific visit I learnt advanced characterization techniques such as AFM modes e.g. MFM and interpretation of MFM contrast. I also learnt about micromagnetic simulators such as OOMMF and Nmag

### **Professional Memberships**

1. Member of European and Slovenian Microscopy Society
2. Member *IEEE* and *IEEE* Magnetic Society (2014-2016)

### **Research Interest and Activities**

- Electrodeposition of 1D nanostructures
- Heterogeneous catalysis
- Plasmonic Photocatalysis
- Physical phenomena: localized surface plasmon resonance, charge carrier dynamics, hot electron injection, Schottky barrier etc.
- Characterizations of nanostructures with SEM, SPM, XRD, XPS, TEM, FTIR, VSM, MFM,

etc.

- Photocatalytic reduction of CO<sub>2</sub> to valuable compounds
- Photocatalytic degradation of environmental toxins from water and environment
- Utilization of sun-light for photocatalytic activities
- Light scattering & localized surface plasmon resonance simulations from spherical and arbitrary shaped nanostructures.
- Electronic structure of photocatalytic materials

### **Active Scientific Research Collaborations**

- Center for the Development of Nanoscience and Nanotechnology, Departamento de Física, Universidad de Santiago de Chile, Santiago 9170124, Chile
- Instituto de Ciencia de Materiales de Madrid, CSIC, 28049 Madrid, Spain.
- IFIMUP and IN—Institute of Nanoscience and Nanotechnology and Departamento Física e Astronomia, Universidade Porto, Rua do Campo Alegre 687, 4169-007 Porto, Portugal.
- IFW-Dresden, Institute for Metallic Materials, P.O. Box 270116, D-01171 Dresden Germany.

### **Institutional Responsibilities**

- 2011 – 2016              Responsible for AFM/MFM equipment, Jozef Stefan Institution, Slovenia

### **Skills**

Software/OS              Origin 8.5 & 9.0, basic programming (Python, Mathematica), Ubuntu, ImageJ, Digital Micrograph (TEM image analysis), scanning probe microscopy images analysis with WSxM, Photo editing & Processing softwares (Corel Draw X6, Corel Photopaint X6, Adobe Photoshop CS6), Movie and animation editing with windows movie maker and Blender, Adobe Acrobat XI Pro, Microsoft Office (Word, Powerpoint, Excel), etc.

- Micromagnetic simulator e.g. OOMMF and Nmag
- Simulation of light scattering from spherical and arbitrary shaped nanoparticles with MieLab, Mieplot 4.42, Light Scatter 2.2, DDSCAT7.6 etc.
- Skill on many simulations tools on [www.nanohub.org](http://www.nanohub.org) e.g. nanoDDSCAT+, Density Function Theory (DFT), etc.

Hardware	Scanning Probe Microscopy (AFM, MFM etc.), X-Ray Diffraction (XRD), Scanning Electron Microscopy and EDXS (JSM-7600F, Carl Zeiss SUPRA 35VP), Transmission Electron Microscopy (TEM), TEM data analysis, Fourier TIR, UV-Vis DR spectrometer (Perkin Elmer Lambda 650, Lambda 35), Photoelectrochemical measurements with three electrode cell, electrodeposition, Vibrating Sample Magnetometry (Microsense EZ7 & Lakeshore), Low & High temperature electrical Measurement with four probe technique.
Others	<ul style="list-style-type: none"><li>• Mentorship of two master students</li><li>• Strong oral and written English communication skills</li><li>• Excellent experimental, data analysis skills</li><li>• Collaboration and teamwork skills,</li><li>• Good administration and organizational skills</li><li>• Ability to work to tight timescales and deadlines</li><li>• Regularly participate in marathons and sports activities</li></ul>