

CURRICULUM VITAE

Personal Profile

Name: Muhammad Akram Raza
Date of Birth: April 01, 1976, Nationality: Pakistani
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Education

Ph.D Physics (Experimental), Nanotechnology, Oct 2007- Feb 2012
Physics of Interfaces and Nanomaterials (PIN) group
University of Twente, The Netherlands
Project title: Colloidal routes to functional substrates: From selective metallization to superhydrophobicity
Supervisors: Prof. Dr. Ir. Bene Poelsema and Dr. Stefan Kooij

M.Phil Physics (Experimental), 2004
Physics Department, University of the Punjab, Lahore
Project title: Irradiation effects on microstructure and tensile behaviors of high purity nickel
Supervisors: Prof. Dr. Khadum Hussain and Prof. Dr. Ijaz Mujtaba Ghauri

M.Sc Physics, 2001, University of the Punjab
Special subject: Advanced Electronics

Professional Achievements

- HEC Approved PhD Supervisor
- HEC Overseas Scholarship for PhD study (2007)
- Total Publications: **26** (ISI Impact Factor publications: **11**, Chapters: **2**, Conference papers: **13**), Accumulative Impact Factor: **27.178**, Total Citations: **2077**, h-index: **7**, i10-index: **4**
- Poster Presentations: **8**, Poster prizes: **2**
- Oral Presentations : **10** (USA, Netherlands, China, South Korea, Pakistan),
- Invited talks: **2**

Research Interests

- Green synthesis, Characterization, antibacterial and anticancer study of nanoparticles.
- Nanostructures fabrication, nanopatterning, selective metallization, self-assembly,
- Wetting Physics, superhydrophobicity, self-cleaning surfaces

Research Projects

- “Synthesis and optical characterization of gold nanospheres, nanostars and nanorods”

Approved by HEC under Startup Research Grant Program (SRGP) for Assistant Professors Joining under IPFP/TTS

(Worth: 0.5 million Rs., completed)

Courses Taught (M. Phil and Ph.D Level)

1. Experimental Characterization Techniques
2. Characterization of Nanostructures
3. Nanomaterials-A Theoretical Approach
4. Chemical Synthesis & Simulation Lab
5. Defects in Solids

M.Phil. Students Supervised

Sr No.	Name	Sessions	Thesis Title
1	Maryam Nadeem	NT (2014 -16)	Liquid phase synthesis characterization and antibacterial activity of nickel nanoparticles
2	Zobia Arshad	NT (2014 -16)	Solution based synthesis, characterization and antibacterial properties of gold nanoparticles
3	Anum Rauf	NT (2014 -16)	Liquid Based Synthesis, Characterization and Antibacterial Activity of Silver Nanoparticles
4	Anam Habib	NT (2015 -17)	Optical CO ₂ gas sensing based on TiO ₂ Thin films of diverse thickness decorated with Silver Nanoparticles
5	Saher Manzoor	NT (2015 -17)	Synthesis, characterization and bactericidal activity of silver nanoparticles decorated cobalt cores
6	Ambreen Shahid	NT (2015 -17)	Effect of Arsenic Nanoparticles on Growth and Hematological Indices of Labeo rohita Juveniles

M.Phil. Students Supervised

Sr No.	Name
1	Shafqat Rasool
2	Abdul Razzaq
3	Yusra Ahmed
4	Khudeja Maham
5	Hina Afzal
6	Ali Raza

Reviewer of International Journals

- Journal of Materials Science, Springer, Germany
- Biofouling, Taylor & Francis, UK
- Beilstein Journal of Nanotechnology, Germany
- Journal of Nanoscience and Nanotechnology, American Scientific Publishers, USA
- Journal of Inorganic Materials, China

Job experience

- August 2016- Present **Assistant Professor (TTS)**
Centre of Excellence In Solid State Physics, University of the Punjab, Quaid-e-Azam Campus, Lahore, Pakistan
- March 2012 – August 2016 **Assistant Professor/ Sr. Research Associate**
Centre of Excellence In Solid State Physics, University of the Punjab, Quaid-e-Azam Campus, Lahore, Pakistan
- Jan 2006 - Sep 2007 **Research Officer/Lecturer**
Centre for advanced studies in Physics (CASP),
Government College University (GCU) Lahore, Pakistan
- April 2012 – June 2013 **Assistant Superintendent (Estate-Maintenance)**
Auranzeb Alamgir Hall, Boys Hostel No.7
University of the Punjab, Quaid-e-Azam Campus, Lahore, Pakistan

Administrative Responsibilities

1. **Member Admission Committee**, Centre of Excellence in Solid State Physics, University of the Punjab Lahore (2013- to date).
2. Library...
3. **Member of Anti-dengue Team**, Centre of Excellence in Solid State Physics, University of the Punjab Lahore (2013- to 2018).
4. **Coordinator, Quality Enhancement Cell (QEC)**, Centre of Excellence in Solid State Physics, University of the Punjab Lahore (2013- to date).
5. **Security Focal Person**, Centre of Excellence in Solid State Physics, University of the Punjab Lahore (2014- 2018)
6. **Member of disciplinary Committee** and Allotment Committee of Boys Hostel No.7, University of the Punjab, Quaid-e-Azam Campus, Lahore, Pakistan (2012-2013)
7. **Information Secretary** of Pakistani Student Association University of Twente, The Netherlands. (2010-2011),

Research Experience

- Green synthesis and characterization of nanoparticles of different shapes and sizes.
- Shape and size dependent antibacterial activity of nanoparticles.
- Anti-dengue studies of nanoparticles.
- Highly selective gold nanoparticles patterning on bare and structured surfaces using pure water by substrate immersion technique.
- Selective metallization by seeded growth on patterned gold nanoparticle arrays by electroless deposition technique.
- Self-assembling of mono- and multilayer arrays of different sized silica spheres (130nm, 440nm, 850nm) on silica substrates by spin coating.
- Manufacturing of hierarchical roughness surfaces by adsorbing of gold nanoparticles on top of silica sphere arrays.
- Surface chemistry modification of structured surfaces by functionalizing the gold and silica spheres with thiol-alkanes and fluoroalkylsilanes, respectively by solution based methods to achieve surface superhydrophobicity.
- Study of droplet impact dynamics on surfaces with different surface wettability using high speed photography.
- Sample preparation by mechanical polishing and chemical etching techniques to reveal the microstructure of high purity nickel.
- Irradiation of samples by high energy electron beams ranging from 8MeV to 18MeV by linear accelerator for defects introduction into microstructure.
- Study of mechanical properties (tensile behavior, yield stress and ductility) for both unirradiated and irradiated specimens at room temperature by a universal testing machine (UTM).

Experimental Skills

Have a hand-on and/or data analysis experience of the followings.

- Scanning Electron Microscopy (SEM), Transmission Electron Microscopy (TEM), Atomic Force Microscopy (AFM), X-ray Photoelectron Spectroscopy (XPS), X-ray Diffraction (XRD) technique.
- Goniometer (Dataphysics OCA15+) for static, advanced and receding contact angle measurements.
- High speed camera (Photron SA3) operated by Photron Fastcam Viewer3 software for high speed imaging during droplet impact studies.
- Cary 300 UV–vis spectrophotometer (Varian Inc.) for optical characterization of different colloidal samples.
- Variable Angle Spectroscopic Ellipsometer (Woollam, VASE) for optical characterization of prepared samples.
- Spin coater (WS-400B-6NNP-Lite Spin Processor, Laurell-USA) for fabrication of silica spheres arrays.
- Clean room facility and chemistry lab (fumed hood and glove box) for nanoparticle synthesis and chemical film deposition to modify the surface chemistry of prepared substrates.
- Langmuir Blodgett trough (KSV Mini) to deposit mono/multilayer of silica spheres.
- Centrifuge (Z36HK centrifuge, Hermle-Germany) for the centrifugation of micro/nanoparticles.

- Universal Testing Machine (Autograph AG-1S, Shimadzu, Japan) to study the tensile behavior of samples.
- Vickers Hardness Tester (HVM-2, Shimadzu, Japan) to test the hardness of different materials
- High temperature furnace (Nabertherm-LHT-02/18-Germany) for annealing the sample to relieve internal stresses caused during sample preparation.

Organizing International Conferences

Member of organizing committee:

1. **International Conference on Solid State Physics (ICSSP'13)**,
held during December 02-06, 2013 at Centre of Excellence in Solid State Physics,
University of the Punjab, Lahore, Pakistan. <http://www.icssp13.org.pk/>
<http://www.icssp13.org.pk/index.php/committees/organizingcommitteemembers>
2. **International Conference on Solid State Physics (ICSSP'15)**,
held during December 13 – 17, 2015 at Centre of Excellence in Solid State Physics,
University of thePunjab, Lahore, Pakistan.
<http://www.icssp15.org.pk/index.php/committees.html>

Courses/workshops Attended

- “National Training Workshop on Nanomaterials and One Day symposium on Nanotechnology Research in Pakistan”, on November 7-9, **2016**, at National Institute for Biotechnology and Genetic Engineering (NIBGE), Faisalabad - Pakistan
- PSF workshop on ‘Establishing and Leading Research Lab’ on May 02-03, **2016**, at Department of Chemical Engineering, COMSATS institute of Information Technology Lahore - Pakitsan
- “Capillarity and Wetting Phenomena course” by Prof.Dr. F. Mugele , University of Twente, The Netherlands
- “Advanced Experimental Methods course” by Dr. R. van Gastel and Dr.Ir. H. Wormeester, University of Twente, The Netherlands
- “Surfaces and Thin Layers course” by Prof.Dr.Ir. B. Poelsema and Dr.Ir. H. Wormeester, University of Twente, The Netherlands
- “Surface Science course” by Prof.Dr.Ir. H.J.W. Zandvliet, Dr. R. van Gastel, Dr. E.S. Kooij and Dr.ir. H. Wormeester, University of Twente, The Netherlands
- PhD Network Workshop “Photons and Matter”, June 29-July 4, 2008, Hollum, Ameland, The Netherlands
- “Workshop on Contact Line Instability at the Lorentz Centre” January 4-8, 2010, Leiden, The Netherlands

References

1. Prof. Dr. Shahzad Naseem

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2. Prof. Dr. Ir. Bene Poelsema

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3. Dr. Stefan. Kooij.

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