



USMAN QUMAR

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

Home:

Moh. Eid Gah Road near galla mandi Lalamusa, Distric Gujrat, Tehsil Kharian, 50200
Lala Musa (Pakistan)

Work: 21 VIA PELLEGRINO TIBALDI 21, 40129 BOLOGNA (Italy)

WORK EXPERIENCE

Head of Department

Punjab Group of Colleges, Kharian Campus, Gujrat, Pakistan [09/2021 – 01/2024]

Research Associate

Riphah Institute of Computing and Applied Sciences [04/02/2020 – 31/05/2020]

City: Lahore

Country: Pakistan

Visiting Lecturer

University of Gujrat, Hafiz Hayat Main Campus, Gujrat [08/10/2020 – 12/2023]

City: Gujrat

Country: Pakistan

Research Assistant

Solar Cell Applications Research Lab, Department of Physics, GC University Lahore [2018 – 2021]

City: Lahore

Country: Pakistan

EDUCATION AND TRAINING

Master of Philosophy (M.Phil) in Physics

RIPHAH International University Islamabad, Pakistan [2018 – 2020]

Address: Raiwand Road Lahore, Pakistan, 54000 Islamabad (Pakistan)

Field(s) of study: Material Science

Final grade: 3.59/4.00

Number of credits: 32

Thesis: Antimicrobial Activity and Catalytic Response of Synthesized Bi-doped MoS₂ Nanosheets | Record no. 36518 |

Link: <http://catalog.riphah.edu.pk:801/cgi-bin/koha/opac-detail.pl?biblionumber=36518>

Master of Science (M.Sc) in Physics

University of Gujrat [2015 – 2017]

Address: UOG, Hafiz Hayat Campus, Jalalpur Jattan Road, Gujrat, Punjab 50700, Pakistan , 50200 Gujrat (Pakistan)

Number of credits: 72

PROFESSIONAL STRENGTH

Research Skills

- **Synthesis Techniques:**

Exfoliations of 2D materials (Graphene, MoS₂, BN)

Hydrothermal/solvothermal synthesis

Sol-gel and Co-Precipitation Method

Chemical Vapor Deposition

Physical Vapor Deposition

- **Applications:**

Photocatalysis

Electrocatalysis

Hydrogen evolution reaction

Thin-film deposition

Material's Characterizations

•TEM, HR-TEM, FESEM, DSC-TGA, Raman, XPS, XRD, FTIR, UV-Vis and PL

Research Based Software

Origin Pro, X'Pert High Score, E-draw max, 3Ds max, Blender, Gatan Digital Micrograph, COMSOL, Multiphysics, and Chem3D

CONFERENCES AND SEMINARS

Nano-Pak 2021, "International E-conference on Emerging Trends and Innovations in Nanotechnology".

[RIPHAH International University, Lahore Campus, Lahore, Pakistan., 19/10/2019 – 20/10/2019]

Link: <https://twitter.com/pyphysicistt?lang=en>

Distinguished Students (American Physical Society)

[Virtual meeting , 15/03/2021 – 19/03/2021]

Link: <https://www.aps.org/>

PUBLICATIONS

Advancements in Biofilm Formation and Control in Potable Water Distribution Systems: A Comprehensive Review and Analysis of Chloramine Decay in Water Systems

[2023]

Umair Waqas, Ahmad Farhan, Ali Haider, **Usman Kumar**, Ali Raza

2D material-based sensing devices: an update

[2023]

J. Z. Hassan, A. Raza*, Z. U. Babar, **U. Qumar**, N. T. Kanerd, A. Cassinese

[Recent Advances in Engineering Strategies of Bi-Based Photocatalysts for Environmental Remediation](#)

[2022]

J.Z. Hassan, A. Raza*, **U. Qumar**, G. Li

[2D Hybrid Photocatalysts for Solar Energy Harvesting](#)

[2022]

A. Raza, A. Rafiq, **U. Qumar**, J.Z. Hassan

[Impact of Metal Oxide Nanoparticles on Adsorptive and Photocatalytic Schemes](#)

[2022]

Book Chapter

M. Ikram, **U. Qumar**, S. Ali, A. Ul-Hamid, Book Title: Functional Hybrid Nanomaterials for Environmental Remediations, CRC Press Taylor & Francis Group, ISBN: 9781003167327

[Hybrid 2D Nanomaterials for Photocatalytic Degradation of Wastewater Pollutants](#)

[2022]

Book Chapter

A. Raza, M. Ikram, **U. Qumar**, A. Rafiq, IGI Global, Hershey, PA, USA, 2022,

[MXene-based nanocomposites for solar energy harvesting](#)

[2022]

A. Raza, **U. Qumar**, A.A. Rafi, M. Ikram, *Sustainable Materials and Technologies*, 2022 e00462

[Photocatalysis vs adsorption by metal oxide nanoparticles](#)

[2022]

U. Qumar, J.Z. Hassan, R.A. Bhatti, A. Raza*, G. Nazir, W. Nabgan, M. Ikram, *Journal of Materials Science & Technology*, 2022, 131, 122-166

[Silver Decorated 2D Nanosheets of GO and MoS₂ serve as Nanocatalyst for Water Treatment and Antimicrobial Applications as ascertained with Molecular Docking Evaluation](#)

[2021]

U. Qumar, J. Hassan, S. Naz, A. Haider, A. Raza, A. Ul-Hamid, J. Haider, I. Shahzadi, I. Ahmad, M. Ikram, *Nanotechnology*, 2021, 3, 255704

[Liquid-phase exfoliated MoS₂ nanosheets doped with p-type transition metals: a comparative analysis of photocatalytic and antimicrobial potential combined with density functional theory](#)

[2021]

A. Raza, **U. Qumar**, A. Haider, S. Naz, J. Haider, A. Ul-Hamid, M. Ikram, S. Ali, S. Goumri-Said, M. Binali Kanoun, *Dalton Transactions*, 2021, 50, 6598-6619

[h-BN Nanosheets Doped with Transition Metals for Environmental Remediation; A DFT approach and Molecular Docking Analysis](#)

[2021]

J. Hassan, S. Naz, A. Haider, A. Raza, A. Ul-Hamid, **U. Qumar**, J. Haider, S. Goumri-Said, M.B. Kanoun, M. Ikram, *Materials Science and Engineering: B*, 2021, 272, 115365

[TiO₂ Co-doped with Zr and Ag shows highly efficient visible light photocatalytic behavior suitable for treatment of polluted water](#)

[2020]

M. Aqeel, M. Ikram, M. Imran, A. Ul-Hamid, **U. Qumar**, A. Shahbaz, A. Saeed *RSC Advances*, 2020, 10, 42235-42248

[Research and Reviews Journal of Microbiology and Biotechnology Dye Degradation and Bactericidal Potential of Bi-Doped Mos 2 Nanosheets](#)

[2020]

U. Qumar, M. Ikram, **Research & Reviews: Journal of Microbiology and Biotechnology**

[Photocatalytic and bactericidal properties and molecular docking analysis of TiO₂ nanoparticles conjugated with Zr for environmental remediation](#)

[2020]

M. Ikram, J. Hassan, A. Raza, A. Haider, S. Naz, A. Ul-Hamid, J. Haider, I. Shahzadi, **U. Qamar** and S. Ali, **RSC Advances**, 2020, 10, 30007-30024

[A comparative study of dirac 2D materials, TMDCs and 2D insulators with regard to their structures and photocatalytic/sonophotocatalytic behavior](#)

[2020]

A. Raza, **U. Qumar**, J. Hassan, M. Ikram, A. Ul-Hamid, J. Haider, M. Imran and S. Ali, **Applied Nanoscience**, 2020, 10, 3875-3899

[2D chemically exfoliated hexagonal boron nitride \(hBN\) nanosheets doped with Ni: synthesis, properties and catalytic application for the treatment of industrial wastewater](#)

[2020]

M. Ikram, J. Hassan, M. Imran, J. Haider, A. Ul-Hamid, I. Shahzadi, M. Ikram, A. Raza, **U. Qumar** and S. Ali, **Applied Nanoscience**, 2020, 10, 3525-3528.

[Promising performance of chemically exfoliated Zr-doped MoS₂ nanosheets for catalytic and antibacterial applications](#)

[2020]

M. Ikram, R. Tabassum, **U. Qumar**, S. Ali, A. Ul-Hamid, A. Haider, A. Raza, M. Imran and S. Ali, **RSC Advances**, 2020, 10, 20559-20571

[Synergistic effect of metal ion incorporated into exfoliated MoS₂ nanosheets on its bactericidal and dye degradation potential](#)

[2020]

U. Qumar, M. Ikram, M. Imran, A. Haider, A. Ul-Hamid, J. Haider, K. N. Riaz, S. Ali, **RSC Dalton Transaction** 2020,**49**, 5362-5377

RECOMMENDATIONS

Name: Prof. Dr. Salamat Ali

Phone number: (+92) 3334267247

Email: salamat.ali@riphah.edu.pk

MS (Supervisor)

Name: Dr. Muhammad Ikram

Phone number: (+92) 3005406667

Email: dr.muhammadikram@gcu.edu.pk

MS (Co-Supervisor)