

Minha Naseer

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MAIN RESEARCH INTEREST AND FIELD OF EXPERTISE

- Nanotechnology in agriculture and biomedicine (Fe/ZnO/CuO NPs)
- Arbuscular mycorrhizal fungi (AMF) in crop stress tolerance
- Bio-nanocomposites for antimicrobial and cancer therapeutic applications
- Plant–microbe–nanoparticle interactions
- Green synthesis of nanoparticles and biofilm eradication
- Magnetic hyperthermia systems for glioblastoma therapy

ACADEMIC EDUCATION

PhD in ‘Life Sciences’ (Sep. 2017 – Dec. 2022)
(Major: Microbiology)

Lanzhou University, Lanzhou, China

Dissertation Title: Concentration-dependent effect of zero valent iron nanoparticles on dryland wheat production and its mediation by arbuscular mycorrhizal fungi.

Master’s in ‘Environmental Science’ (Feb. 2014 – July 2017)

CGPA: 3.65/4

International Islamic University, Islamabad, Pakistan

Master’s Thesis at Pakistan Institute of Nuclear Science and Technology: Green synthesis of nanoparticles and their antibacterial application.

Bachelor’s in ‘Environmental Science’ (Sep. 2009 – July 2013)

CGPA: 3.66/4

International Islamic University, Islamabad, Pakistan

Bachelor’s Thesis at Pakistan Metrological Department: Monitoring droughts in Pakistan using spatial techniques.

PROFESSIONAL EXPERIENCE

Researcher (Dec. 2021 – Dec. 2024)

Department of Precision Medicine, University of Campania Luigi Vanvitelli, Naples, Italy

Visiting Researcher, Helmholtz-Zentrum Dresden-Rossendorf, Germany (July – Oct. 2024)

Project: Nanocomposite synthesis for magnetic hyperthermia therapy in glioblastoma.

Main Responsibilities:

- Designing magnetic bio-nanocomposites for therapeutic magnetic hyperthermia
- Cytotoxicity studies against glioblastoma cells using FACs analysis, Western Blot, and qPCR.
- Contributing to interdisciplinary and multidisciplinary research combining nanomedicine, microbiology, and biotechnology

RESEARCH PUBLICATIONS

- **Minha Naseer**, Yu-Miao Yang, Ying Zhu, Zhao Ling, Jing Cao, Song Wang, Wen-Ying Wang, You-Cai Xiong. 2024. Nano-iron and AM fungi inoculation in dryland wheat field: A sustainable alternative to plastic film mulching. *Field Crops Research* 306: 109208. <https://doi.org/10.1016/j.fcr.2023.109208>
- **Minha Naseer**, Ying Zhu, Feng-Min Li, Yu-Miao Yang, Song Wang, You-Cai Xiong. 2022. Nano-enabled improvements of growth and colonization rate in wheat inoculated with arbuscular mycorrhizal fungi. *Environmental Pollution* 295: 118724. <https://doi.org/10.1016/j.envpol.2021.118724>
- **Minha Naseer**, Rana Ramadan, Jianmin Xing, Nadia A. Samak. 2021. Facile green synthesis of copper oxide nanoparticles for the eradication of multidrug resistant *Klebsiella pneumonia* and *Helicobacter pylori* biofilms. *International Biodeterioration & Biodegradation*, 159:105201. <https://doi.org/10.1016/j.ibiod.2021.105201>
- **Minha Naseer**, Usman Aslam, Bushra Khalid, Bin Chen. 2020. Green route to synthesize zinc oxide nanoparticles using leaf extracts of *Cassia fistula* and *Melia azedarach* and their antibacterial potential. *Scientific Reports*, 10:9055. <https://doi.org/10.1038/s41598-020-65949-3>
- Yang, Yu-Miao, **Minha Naseer**, Ying Zhu, Bao-Zhong Wang, Shuang-Guo Zhu, Ying-Long Chen, Yue Ma, et al. "Iron Nanostructure Primes Arbuscular Mycorrhizal Fungi Symbiosis Tightly Connecting Maize Leaf Photosynthesis Via a Nanofilm Effect." *ACS Nano* (2024/07/29 2024). (Equally contributing author) <https://doi.org/10.1021/acsnano.4c04145>
- Yu-Miao Yang, **Minha Naseer**, Ying Zhu, Shuang-Guo Zhu, Song Wang, Bao- Zhong Wang, Jing Wang, Hao Zhu, Wei Wang, Hong-Yan Tao, You-Cai Xiong. 2023. Priming effects of nZVI on carbon sequestration and iron uptake are positively mediated by AM fungus in semiarid agricultural soils. *Science of the Total Environment*, 882: 163632. (Equally contributing author) <https://doi.org/10.1016/j.scitotenv.2023.163632>
- Yu-Miao Yang, **Minha Naseer**, Ying Zhu, Shuang-Guo Zhu, Song Wang, Bao- Zhong Wang, Jing Wang, Hao Zhu, Wei Wang, Hong-Yan Tao, You-Cai Xiong. 2022. Dual effects of nZVI on maize growth and water use are positively mediated by arbuscular mycorrhizal fungi via rhizosphere interactions. *Environmental Pollution*, 308:119661. (Equally contributing author) <https://doi.org/10.1016/j.envpol.2022.119661>
- Yang Yu-Miao, Ying Zhu, **Minha Naseer**, Qi Wang, Guang Li, Hong-Yan Tao, Shuang-Guo Zhu, Bao-Zhong Wang, Wei Wang, You-Cai Xiong. 2022. Rhizosphere Effect of Nanoscale Zero-Valent Iron on Mycorrhiza- Dependent Maize Assimilation. *Plant, Cell & Environment*, 1: 17. <https://doi.org/10.1111/pce.14478>
- Hai-Xia Duan, Chong-Liang Luo, Sai-Yong Zhu, Wei Wang, **Minha Naseer**, You-Cai Xiong. 2021. Density- and moisture-dependent effects of arbuscular mycorrhizal fungus on drought acclimation in wheat. *Ecological Applications*, 31: 02444. <https://doi.org/10.1002/eap.2444>
- Hai-Xia Duan, Chong-Liang Luo, Ji-Yuan Li, Bao-Zhong Wang, Minha Naseer, You-Cai Xiong. 2021. Improvement of wheat productivity and soil quality by arbuscular mycorrhizal fungi is density- and moisture-dependent. *Agronomy for Sustainable Development*, 41:3. <https://doi.org/10.1007/s13593-020-00659-8>
- Chong-Liang Luo, Xiao-Feng Zhang, Hai-Xia Duan, David M. Mburu, Levis Kavagi, **Minha Naseer**, Run-Zi Dai, Aggrey B. Nyende, Asfa Batool, You-Cai Xiong. Allometric relationship and yield formation in response to planting density under ridge-furrow plastic mulching in rain fed wheat 2020. *Field Crops Research* 251: 107785. <https://doi.org/10.1016/j.fcr.2020.107785>

Conference Proceedings

- Bushra Khalid, **Minha Naseer**, Sidra Shahbaz Khan, Ayesha Khalid, Qaiser Sultana. Proceedings of 2015. Analysis of Drought Conditions for Sindh Province: January-July (2012). International Conference on Environmental Science and Technology [C], 4.

Conference Posters

- **Minha Naseer**, Bushra Khalid. October 2018. Assessment of drought in regions of Pakistan using NDVI concerning different rainfall regimes. Poster presented at SPARC General Assembly, Kyoto, Japan.
- **Minha Naseer**, Vincenzo Carafa, and Lucia Altucci. May 2024. Chitosan-Mediated Green Synthesis of Iron Oxide Nanoparticles: A Sustainable and Biocompatible Approach for Antibacterial Efficacy in Pharmaceutical Applications. 8th Green & Sustainable Chemistry Conference, Elsevier. Dresden, Germany.

Book Chapter

- Della Torre, Laura, Antonio Beato, Vincenza Capone, Daniela Carannante, Giulia Verrilli, Gregorio Favale, Hoda Taherigorji, **Minha Naseer**, Lucia Altucci, Rosaria Benedetti, Vincenzo Carafa. 2024. "Modulation of Autophagy and Apoptosis in Leukemia." Comprehensive Hematology and Stem Cell Research: Elsevier.

AWARDS, GRANTS, and SCHOLARSHIPS

- Selected for "China Scholarship Council PhD Scholarship" (CSC) (Sep. 2017 – Dec. 2022)
- Awarded "SPARC World Climate Research Program Travel Scholarship" (Oct. 2018)

SUPERVISION EXPERIENCE

Lanzhou University, China

- Co-supervised 01 PhD and 04 master's students for their dissertations on the project: *Application of nZVI on maize in combination with arbuscular mycorrhizal fungi*.

SKILLS AND EXPERTISE

- **Molecular Biology Techniques:**
 - Proficient in DNA and RNA extraction, purification, and quantification.
 - Experienced in qPCR, FACS analysis, and Western blot for gene expression and protein analysis.
- **Imaging & Microscopy:**
 - Skilled in confocal microscopy and fluorescence microscopy for cellular and subcellular imaging.
- **Cell Culture & Microbiology:**
 - Proficient in working with cancer cell lines and bacterial cultures
 - Expertise in arbuscular mycorrhizal fungi (AMF) cultivation and plant-microbe interactions.
- **Nanoparticle Synthesis & Characterization:**

- Proficient in the synthesis of metal oxide nanoparticles
 - Skilled in nanoparticle characterization techniques: FTIR, XRD, XPS, DLS, UV-Vis spectroscopy.
- ***Data Analysis & Software:***
 - Python, SPSS, Origin for statistical and data analysis.