

Curriculum Vitae



Position/Designation: Assistant Professor

Department: Biological Sciences and Chemistry

College: Arts and Science

University of Nizwa, Sultanate of Oman

Personal Information
Name: Dr. Muna Hamed Salim Al-Hinai Marital Status: Single Email Address: munahamed@unizwa.edu.om Contact Numbers: 95311998, Ext: 446
Academic Qualifications
PhD Chemical and Process Engineering, MSc Chemistry, BSc Chemistry
Teaching Activities, Current / Previous Experience
Current Activities: Assistant Professor, Department of Biological Science and Chemistry Graduation Project Coordinator, Chemistry Section: September 2025- present Previous Experience: Assistant Professor, Department of Process Engineering Internship Coordinator, International Maritime College Oman, National University of Science and Technology: October 2020- August 2025 Lecturer, Chemistry, German University of Technology: February- May 2023 Techer Assistant, Department of Chemistry, College of Science, Sultan Qaboos University: January 2011- October 2012
Research Activities
(includes but not limited to research interests, conference attendance, conference presentations and publications, refereed journal, articles ,books, ect.)

Research interests: Design synthesis of nanomaterials, colloidal and interfaces, composite membranes, environmental remediation, water treatment, CO₂ capture, biomimetic materials, corrosion inhibition

conference presentations:

- 1- Cinnamaldehyde- Modified Chitosan Corrosion Inhibition Activity on Carbon Steel (CS-SS-316L), Haitham Al- Kalbani, Balqees Al-Shukaili, Saif Al-Risi, Abdul Aziz Al-Kaabi, Myo Tay Zar Myint, Muna Al-Ajmi, Tahereh Jafary, Muna Al-Hinai, Anteneh Mesfin, International Conference on Green and Sustainable Materials, University of Al-Sharqia, Ibra, 13th – 14th October 2025
- 2- Utilizing Alumina Waste for CO₂ Capture, Reem Al-Masani, Zahraa Al-Ajmi, Anwar Al-Mahrazi, Fatma Al-Shibli, Muna Al-Hinai, International Engineering Day 2025, Sohar, 22nd April 2025
- 3- Removal Organic Pollutants Using tartaric acid modified biomass and clay- based adsorbents, Anteneh Mesfin Yeneneh, Tahereh Jafary, Muna Al Hinai, Jimoh Adewole and Khadija Al Balushi, International Conference on Innovation, Sustainability and Applied Sciences (ICISAS 2025), Dubai, 22nd -23rd February 2025
- 4- Nanomaterial Based Luminescent Pesticides, Muna Al-Hinai, Richard Ruska, Shan S. Zaidi, Anaclet Nsbimana, Saikat Nandi, Vindula Kumaranayake, 4th Lindau Sciathon, 73 Lindau Nobel Laureates Meeting, Lindau, Germany 30th June- 5th July 2024
- 5- Next-Gen Environmental Management: Revolutionizing Water and Wastewater Surveillance by Integrating IoT and MFC Biosensors, Maira Al Qaidi, Tahereh Jafary, Muna Al Hinai, Anteneh Mesfin Yeneneh, 2nd International Conference on Environmental Sciences and Engineering for Sustainable Development, ESESD 2024, UTAS, Sohar, 6-7th March 2024
- 6- Harnessing Wastewater for Green Hydrogen Production and Sustainable Desalination through Microbial Electrolysis Desalination Technology, Tahereh Jafary, Anteneh Yeneneh, Muna Al-Hinai, 2nd International Conference on Environmental Sciences and Engineering for Sustainable Development, ESESD 2024, UTAS, Sohar, 6-7th March 2024
- 7- Valorization of agriculture waste into activated carbon for CO₂ capture, Manar Al-Attar, Anfal Al-Shizawi, Tahere Jafary, Muna Al-Hinai, Anteneh Mesfin, 2nd International Conference on Environmental Sciences and Engineering for Sustainable Development, ESESD 2024, UTAS, Sohar, 6-7th March 2024
- 8- Life Cycle Assessment of Hydrogen Production in Oman and the Middle East Region, Anteneh Yeneneh, Yumna Al Maqbali, Tahereh Jafary, Jinan Al Mamari, Said Al Jabri, Muna Al Hinai, 2nd

International Conference on Environmental Sciences and Engineering for Sustainable Development, ESESD 2024, UTAS, Sohar, 6-7th March 2024

- 9- Advancing Sustainability and Circular Economy: An Integrated Reactor Design for Simultaneous Wastewater Treatment, Desalination, and Green Hydrogen Generation, Khalfan Al-Dhahri, Khalid Al-Balushi, Hilal Al-Busaidi, Salim Al-Mushaifri, Tahereh Jafari, Muna Al-Hinai, 10th Undergraduate Research Competition, Abu Dhabi, May 18th 2023
- 10- Efficient and Ecofriendly Water/wastewater Quality Monitoring with Microbial Fuel Cell Biosensors, Atheer Al Maamari, Fatima Al Baluki, Anfal Al Shezawi, Abrar Al Harthi, Majid Al Ghaithi, Anteneh Mesfin Yeneneh, Muna Al Hinai and Tahereh Jafari, Middle East College Student Research Competition, Muscat, 16th May 2023
- 11- A Comprehensive Study on Valorization of Spent Coffee Grounds into Activated Carbon in Oman, Jawaher Al-Bulushi, Manar Al Attar, Abdulrahman Al-Marzouqi, Shamail Alsaadi, Muna Al Hinai, Tahereh Jafari, Middle East College Student Research Competition, Muscat, 16th May 2023
- 12- ZnO Modified Sand Filter for CO₂ Capture and Conversion Into Methanol: Bayan Al Dabdoub, Reem Al Balushi, Abdullah Al Jabri, Dr. Muna Al Hinai and Dr. Tahereh Jafari, Middle East College Student Research Competition, Muscat, 16th May 2023
- 13- Application of Eh-pH diagrams for synthesis of photocatalysts for water treatment, Muna Al-Hinai, The 4th RIC IMCO, International Maritime College Oman, 29th March 2022
- 14- Enhancement of Antibacterial Activity of Polyethersulfone Ultrafiltration Membranes Using Nanostructures Muna Al-Hinai*, PE Colloquium Meeting, International Maritime College Oman, Virtual, 26th May 2021
- 15- Modification of polyethersulfone ultrafiltration membranes with carbon nanotubes Muna H. Al-Hinai*, Halima H.A. Al-Hinai, Myo Tay Zar Myint, Mohammed Al-Abri, Priyanka Sathe, Sergey Dobretsov, Ashraf T. Al-Hinai, and Joydeep Dutta, Produced Water Middle East 2019, Muscat, Oman, 23rd – 24th October 2019
- 16- Mild functionalization of carbon nanotubes for improvement of filtration and antibacterial performance of polyethersulfone membranes Muna H. Al-Hinai*, Priyanka Sathe, Mohammed Al-Abri, Sergey Dobretsov, Ashraf T. Al-Hinai, and Joydeep Dutta, 8th IUPAC Conference on Green Chemistry, Bangkok, Thailand, 9th - 14th September 2018, P111-53

- 17- Modification of Polyethersulfone Ultrafiltration Membranes Using Nanomaterials Muna Al-Hinai*, 1st Students Research Conference, Sultan Qaboos University, Muscat, Oman, 10th April 2018
- 18- Toward biofouling inhibition of polyethersulfone using nanomaterials Muna Al-Hinai*, 3rd Omani Desalination Researchers Network Meeting & MEDRC Alumni Lecture Series, Under the topic: "Towards efficient use of water in agriculture", Muscat, Oman, 22nd February 2018
- 19- Toward Biofouling Inhibition of Poly(ether sulfone) Membranes by in Situ Growth of ZnO Nanorods Muna H. Al-Hinai*, Priyanka Sathe, Mohammed Al-Abri, Sergey Dobretsov, Ashraf T. Al-Hinai, and Joydeep Dutta, The Second GCC Marine Biotechnology Conference: Emerging Opportunities and Future Perspectives, Muscat, Oman 31st October- 1st November 2017
- 20- ZnO modified- Polyethersulfone Membranes as Biofouling Resistance in Water Treatment Applications, Muna H. Al-Hinai*, Priyanka Sathe, Mohammed Al-Abri, Sergey Dobretsov, Ashraf T. Al-Hinai, and Joydeep Dutta, Oman Energy and Water Exhibition and Conference, Oman Expo 2016, Muscat, Oman 1st -3rd May 2016
- 21- Modification of Blended Polyethersulfone Membranes by in-situ growth of zinc oxide nanostructures for prevention of biofouling during Water Treatment, Muna H. Al-Hinai*, Priyanka Sathe, Ashraf T. Al-Hinai, Mohammed Al-Abri, Sergey Dobretsov and Joydeep Dutta, 251st ACS National Meeting & Exposition, San Diego, USA, 13- 17th March, 2016
- 22- Nanostructures modifying polymeric membranes for water treatment applications, Muna H. Al-Hinai*, Priyanka Sathe, Ashraf T. Al-Hinai, Mohammed Al-Abri, Sergey Dobretsov and Joydeep Dutta Nanotechnology for Water Treatment and Solar Energy Applications, Muscat, Oman, 15-16th December 2015
- 23- Tailored Synthesis of Binary and Ternary Metal Oxide Semiconductor Nanostructures Using Eh-pH Diagrams, Muna H. Al-Hinai*, Ashraf T. Al-Hinai, Asma N. Al-Lazami and Joydeep Dutta Challenges in Inorganic and Materials Chemistry (ISACS13), Dublin, Ireland, 1st - 4th July 2014, P99
- 24- Zinc stannate microcubes formed by self-organization of nanocrystallites precipitated at room temperature in aqueous media, Muna Al-Hinai*, Ashraf Al-Hinai and Joydeep Dutta Sixth Annual International Workshop on Advanced Materials (IWAM 2014), Ras Al Khaimah, UAE, from 23rd - 25th February 2014, P97

25- Photocatalytic Water Treatment, Muna Al-Hinai*, Ashraf. T. Al-Hinai and Joydeep Dutta The First Gulf Chemistry Forum “Toward Green Chemistry”, Sultan Qaboos University, Muscat, Oman, 27th - 28th December 2011

26- Low Temperature Synthesis of ZnSnO₃, Muna Al-Hinai*, Ashraf Al-Hinai Third International Conference for Young Chemists (ICYC 2010), Penang, Malaysia, 23rd -25th June, 2010

Publications:

- 1- Jawaher Al Balushi, Shama Al Saadi, Mitra Ahanchi, Manar Al Attar, Tahereh Jafary, Muna Al-Hinai, Anteneh Mesfin, Yeneneh, J. Sadhik Basha, A Comprehensive Review on Sustainable Conversion of Spent Coffee Grounds into Energy Resources and Environmental Applications, Biomass, September (2025), 5 (3), Page 55, DOI: <https://doi.org/10.3390/biomass5030055>
- 2- Tahereh Jafary, Anteneh Mesfin Yeneneh, Muna Al Hinai, Role of microbial electrolysis desalination cell in sustainable water and energy management: Performance assessment of platinum and nickel foam cathodes and simulating integration with reverse osmosis systems, International Journal of Hydrogen Energy, February (2025), DOI: <https://doi.org/10.1016/j.ijhydene.2024.04.190>
- 3- Tushar Kanti Sen, Anteneh Mesfin Yeneneh, Tahereh Jafary, Khadija Al Balushi, Eugene Hong, Jimoh K Adewole, Muna Hamed Al Hinai, Sanjay Shinde, Municipal sewage sludge dewatering performance enhancement by ultrasonic cavitation and advanced oxidation: A case study, Water Science & Technology, May 2024, DOI: <https://doi.org/10.2166/wst.2024.132>
- 4- Anteneh Mesfin Yeneneh, Tahereh Jafary, Asma Al-Kharousi, Muna Al-Ajmi, Habeebullah Oladipo, Thirumalai Kumar, Jimoh Adewole, Khadija Al-Balushi, Muna Al-Hinai, Ahoud Al-Hamadani, Application of Functional Materials and Corrosion Inhibitors for Downstream Offshore Oil and Gas Industry, Taylor and Francis Group (2023), Page 242, ISBN: 9781003242550
- 5- Tahereh Jafari, Anteneh Mesfin Yeneneh, Muna Al-Hinai, Mimi Hani Abu Baker, Mostafa Rahimnejad, Future Applications of biological Fuel Cells. Elsevier (2023), ISBN: 978-0-323-85711-6
- 6- Lamia Al-Farsi, Tewfik M. Souier, Muna Al-Hinai, Myo T. Z. Myint, Htet H. Kyaw, Hisham M. Widatalla, and Mohammed Al-Abri, pH Controlled Nanostructure and Optical Properties of ZnO and Al-Doped ZnO Nanorod Arrays Grown by Microwave Assisted Hydrothermal Method. Nanomaterials (2022), 12, 3735. <https://doi.org/10.3390/nano12213735>
- 7- Maryam Al-Bulushi, Muna Al-Hinai, Sulaiman Al-Obaidani, Sergey Dobrestove, Edward Nxumalo and Mohammed Al-Abri Antifouling Enhancement of Polyethersulfone Membranes

<p>Incorporated with Silver Nanoparticles for BSA and Humic Acid Removal. Desalination and water Treatment, October (2021), Pages 123- 142, DOI: https://doi.org/10.5004/dwt.2021.27883</p>	
8-	<p>Muna H. Al-Hinai, Priyanka Sathe, Mohammed Z. Al-Abri, Sergey Dobretsov, Ashraf T. Al-Hinai, and Joydeep Dutta Antimicrobial Activity Enhancement of Poly(ether sulfone) Membranes by in Situ Growth of ZnO Nanorods ACS Omega 2 (2017) 3257-3167 http://pubs.acs.org/doi/abs/10.1021/acsomega.7b00314</p>
9-	<p>Tanujjal Bora, Muna H. Al-Hinai, Ashraf T. Al-Hinai, and Joydeep Dutta Phase Transformation of Metastable ZnSnO₃ Upon Thermal Decomposition by In-Situ Temperature-Dependent Raman Spectroscopy The American Ceramic Society (2015) 1-6 http://onlinelibrary.wiley.com/doi/10.1111/jace.13791/abstract</p>
10-	<p>Muna H. Al-Hinai, Ashraf T. Al-Hinai and Joydeep Dutta Phase transformation behavior of zinc metastannates obtained by aqueous precipitation at different temperatures Journal of Materials Science 49(20) (2014) 7282- 7289 https://link.springer.com/article/10.1007/s10853-014-8437-3</p>
11-	<p>Muhammad Najam Khan, Muna Al-Hinai, Ashraf Al-Hinai and Joydeep Dutta Visible light photocatalysis of mixed phase zinc stannate/zinc oxide nanostructures precipitated at room temperature in aqueous media Ceramics International 40 (2014) 8743- 8752 http://www.sciencedirect.com/science/article/pii/S0272884214001217</p>
12-	<p>Ashraf T. Al-Hinai, Muna H. Al-Hinai and Joydeep Dutta Application of Eh/pH diagram for room temperature precipitation of zinc stannate microcubes in an aqueous media Journal of Materials Research Bulletin 49 (2014) 645- 650 https://www.sciencedirect.com/science/article/pii/S0025540813008404</p>
Faculty Administrative Experience	
<ul style="list-style-type: none"> - Graduation project Coordinator, Chemistry Section, Department of Biological Sciences and Chemistry, College of Arts and Science, University of Nizwa - Internship Coordinator, Department of Process Engineering, International Maritime College Oman, National University of Science and Technology - Eidaad Program Focal Point, International Maritime College Oman, National University of Science and Technology 	
Community Services	
<ul style="list-style-type: none"> - Supporting High School students in Their research-oriented project related to pyrolysis, IMCO, AC 2022- 2023 - Omani Young Water Researchers Award 2022, Undergraduate category Scientific Committee, MEDRC, January 2023 - AICHE & SACHE membership certificates, University of Applied Sciences, Suhar, November 2022 	

<ul style="list-style-type: none"> - Lindau Participation/ Oman Woman Day, Oman TV, Muscat, 17th October 2022 - Women in Science and Innovation/ Oman Women Day, Sohar Operation Services, Crown Plaza, Suhar, 17th October 2022 - Linking patient with medical team for better understanding and mental controlling of patient status (November 2018- to present)
Consultancy Activities
Membership in Professional Bodies
<ul style="list-style-type: none"> - Nanomedicine Network, Lindau Network, (April 2023, to present) - Lindau Monitoring Hub, Germany, (June 2023- present) - Lindau Alumni Network, (June 2022- present) - American Institute of Chemical Engineering (AIChE), (2022- present) - American Chemical Society, Community membership (2020- 2021) - Phi Science Institute (2020- 2021) - Produced Water Society (2019- 2020) - Polymeric Materials: Science and Engineering Division of the American Chemical Society membership (2016-2018) - American Chemical Society (2011- 2017) - Royal Society of Chemistry (2014- 2016)
Awards and recognitions
<ul style="list-style-type: none"> - Young Omani Youth Achievers, Sharqia University, Ibra, 10th April 2025 - Winner of Upgrade (Supervisor), MoHERI, Muscat, August 2024 - 4th Lindau Sciathon, 73rd Lindau Nobel Laureates Meeting, Finalist, Lindau, Germany 30th June- 5th July 2024 - Process Engineering 3-minute Thesis competition 2023-2024 (Supervisor), 2nd Place, IMCO, Suhar, 6th June 2024 - Microwave and Oxidation Assisted Hydrodynamic Cavitation for Enhanced Degradation of Xenobiotics, 2nd International Conference on Environmental Sciences and Engineering for Sustainable Development, ESESD 2024, 1st Place Poster Presentation, Suhar, 6-7th March 2024 - Development of Micro-fuel cell-based sensor, Oman Innovation Festival-North Al Batinah Region- Second prize, Suhar, 7th February 2024 - MFC biosensor, (Co-supervisor), 1st Prize Project Presentation Competition, STEP 2023, Suhar, December 2023

- MFC biosensor (Co-supervisor), National University of Science and Technology Best Students Research Award, Muscat, 10th October 2023
- Startup Ideas Program "Manafa", MOHERI, 19th January 2023
- Hydrodynamic cavitation and advanced oxidation for enhanced aerator performance in industrial and municipal wastewater treatment plants, Co- Investigator, MOHERI-RG, 2022
- Moving toward sustainability by a novel, low-cost and integrated electrolysis-desalination system for simultaneous green hydrogen generation, wastewater treatment, and zero-waste desalination, Co- Investigator, MOHERI-RG, 2022
- Synthesis of Chitosan from Marine Waste as green corrosion inhibitor for industrial applications, Co- Investigator, TRC GRG, 2022
- An experimental probe to ascertain the ignition delay of fuels on employing hot-plate evaporation setup, Co- Investigator, TRC GRG, 2022
- Novel 3D Designed sand filter for CO₂ Capture and Conversion into Methanol, Faculty Mentor, TRC URG, 2022, BFP/URG/EI/22/396
- Fabrication of Low-cost and eco-friendly MFC-based biosensor for real-time monitoring of chemical oxygen demand in industrial wastewater plants, Faculty Mentor, TRC URG, 2022, BFP/URG/EBR/22/369
- 71st Lindau Nobel Laureate Meeting Alumni, 26th June- 1st July 2022, Lindau, Germany
- College Research Grant: Simultaneous green hydrogen generation, decentralized wastewater treatment and desalination in a novel reactor design of microbial electrolysis desalination system, International Maritime College Oman, January 2022- 2023
- Research Council Grant: Synthesis of Plastic Oil and its Utilization in a Compression ignition Engine to Investigate Emission, Combustion and Performance Features (Co-Co-Principal Investigator) (Approved October 2021)
- SQU scholarship to attend WIPO summer school, August 2021
- College Research Grant, Development of a Noble Nano-composite membrane for separation of gaseous petrochemicals, International Maritime College Oman, March 2021- 2022
- Postdoctoral fellowship from SQU internal grant (IG/DVC/NRC/20/01), Sultan Qaboos University, March 2020
- The Best Postgraduate Thesis Award for the academic year 2016- 2017, Sultan Qaboos University, April 2019

- European Society of Marine Biotechnology award for best poster, Second GCC Marine Biotechnology Conference: Emerging Opportunities and Future Perspectives, Muscat, Oman 31st October- 1st November 2017
- The Research Council PhD dissertation scholarship (September 2013- October 2017)
- Sultan Qaboos University Postgraduate scholarship (January 2011- October 2012)
- Vice- Chancellor award for the high academic achievement during the academic year (2009– 2010), Sultan Qaboos University
- Vice- Chancellor award for the high academic achievement during the academic year (2007– 2008), Sultan Qaboos University
- Dean Honors list four times (2008– 2010), College of Science, Sultan Qaboos University