

Full Name: Dr. Muhammad Zafar

Position/Title: Assistant Professor (TTS)

Institution: Institute of Energy & Environmental Engineering (Former Center for Coal Technology), University of the Punjab, Lahore.

Professional Training/Education:

B.Sc. Chemical Engineering, NFC Institute of Engineering & Technological Training, Pakistan. 2007.

M.Sc. Chemical Engineering, University of the Punjab, Pakistan. 2010.

PhD Chemical Engineering, Chonnam National University, South Korea. 2018.

Chronological List of Positions:

- Faculty of Engineering & Technology, Institute of Energy & Environmental Engineering IEEE (Former Center for Coal Technology), University of the Punjab, Pakistan. (March 2019- till date) As an Assistant Professor in the IEEE.
- Dept. of Applied Chemical Engineering, Chonnam National University, South Korea. (September 2014 to September 2018): As a Research Assistant in Chemical Process Laboratory for Advanced Materials.
- Workwear Lanka Pvt. Ltd. (Midas Safety Inc.), Sri Lanka. (June 2012 to December 2013): As an Assistant Manager Technical/R&D in Workwear Lanka Pvt. Ltd. (Midas Safety Inc.) Sri Lanka Operations.
- Tufail Chemical Industries Limited, Raiwind Road Lahore, Pakistan. (October 2010 to April 2012). As a QC and R&D Officer in Tufail Chemical Industries Limited.
- Steel Alloys Pvt. Ltd Sheikhupura Road Lahore, Pakistan (June 2007 to September 2010). As a Trainee Engineer in Steel Alloys Pvt. Ltd:

List of publications:

- 1). Low-bias Photo Anode for Photoelectrochemical Water Splitting: Revealing the Intrinsic Limitations of Manganese Vanadium Oxide beyond the Space-Charge Region. By Seenivasan Selvaraj, Muhammad Zafar, Hee Moon, and Do- Heyoung Kim. (Under review in Applied Catalysis B: Environmental)
- 2). Enhancing durability and photoelectrochemical performance of the earth abundant Ni-Mo catalyzed TiO₂/CdS/CIGS photocathode under various pH conditions, ChemSusChem. Volume 11(20), 24 October 2018, Pages 3679-3688 By Minki Baek, Muhammad Zafar, Seongbeen Kim , Do-Heyoung Kim, Chan-Wook Jeon, Jinwoo Lee. (DOI: 10.1002/cssc.201801211)
- 3). Improvement in performance of inverted organic solar cell by rare earth element lanthanum doped ZnO electron buffer layer. By Muhammad Zafar, BongSoo Kim and Do-Heyoung Kim. Materials Chemistry and Physics, 28 August 2019 (Accepted) (doi.org/10.1016/j.matchemphys.2019.122076).
- 4). Effect of randomly grown morphology of ZnO nanorods in inverted organic solar cells. By Muhammad Zafar, Shenawar Ali Kahn, Fatima Sher, Muddassir Ali, Tareq Manzoor, Sheik Abdur Rahman, Woo Young Kim, Mahmood Saleem, Do- Heyoung Kim. Journal of Nanoscience and Nanotechnology, 9 July 2019. (Accepted).

- 5). Improvement in performance of inverted polymer solar cells by interface engineering of ZnS ALD on ZnO electron buffer layer. *Applied Surface Science*, Volume 481, 24 March 2019, Pages 1442-1448 By Muhammad Zafar, BongSoo Kim, Do-Heyoung Kim. (doi.org/10.1016/j.apsusc.2019.03.257)
- 6). Improved inverted-organic-solar-cell performance via sulfur doping of ZnO films as electron buffer layer. *Materials Science in Semiconductor Processing*, Volume 96, 21 January 2019, Pages 66-72 By Muhammad Zafar, Ju-Yong Yun, Do- Heyoung Kim. (doi.org/10.1016/j.mssp.2019.01.046)
- 7). Performance of inverted organic photovoltaic cells with nitrogen doped TiO₂ films by atomic layer deposition. *Korean Journal of Chemical Engineering*. Volume 35(2), 7 October 2017, Pages 567-573 by Muhammad Zafar, Ju-Yong Yun, Do- Heyoung Kim. (DOI: 10.1007/s11814-017-0285-9)
- 8). Highly stable inverted organic photovoltaic cells with a V₂O₅ hole transport layer. *Korean Journal of Chemical Engineering*. Volume 34(5), 14 February 2017, Pages 1504-1508 by Muhammad Zafar, Ju-Yong Yun, Do-Heyoung Kim. (DOI: 10.1007/s11814-017-0043-z)
- 9). Performance of inverted polymer solar cells with randomly oriented ZnO nanorods coupled with atomic layer deposited ZnO. *Applied Surface Science*, Volume 398, 27 November 2016, Pages 9-14 by Muhammad Zafar, Ju-Yong Yun, Do-Heyoung Kim. (doi.org/10.1016/j.apsusc.2016.11.211)
- 10). Effect of additives on the properties and performance of cellulose acetate derivative membranes in the separation of isopropanol/water mixtures. *Desalination*, Volume 285, 31 January 2012, Pages 359-365 by Muhammad Zafar, Muddassir Ali, Shahzad Maqsood Khan, Tahir Jamil, Muhammad Taqi Zahid Butt. (doi:10.1016/j.desal.2011.10.027).
- 11). Influence of glycol additives on the structure and performance of cellulose acetate/zinc oxide blend membranes. *Desalination*, Volume 270, Issues 1-3, 1 April 2011, Pages 98-104 by Muddassir Ali, Muhammad Zafar, Tahir Jamil, Muhammad Taqi Zahid Butt. (doi:10.1016/j.desal.2010.11.027).
- 12). Dehydration of aqueous ethanol using cellulose acetate membranes in pervaporation process by Muddassir Ali, Muhammad Zafar, Muhammad Usman, Shahzad Maqsood Khan, Tahir Jamil, 4th Symposium on Engineering Sciences, 1st March 2011, PU Lahore, Pakistan.
- 13). Analysis of a Thin Layer Formation of Third-Grade Fluid by Tareq Manzoor, Kashif Nazar, Muhammad Zafar, Shaukat Iqbal, Muddassir Ali, Woo Young Kim, Mahmood Saleem, Sanaullah Manzoor Coatings. 2019, 9, Pages: 1-15, MDPI.
- 14). Effect of Randomly Grown Morphology of ZnO Nanorods in Inverted Organic Solar Cells by Muhammad Zafar, Shenawar Ali Khan, Fatima Sher, Muddassir Ali, Tareq Manzoor, Sheik Abdur Rahman, Woo Young Kim, Mahmood Saleem, Do-Heyoung Kim, *Journal of Nanoscience and Nanotechnology*. 2020, 20, Pages: 4414–4418, American Scientific Publishers.
- 15). Improving FWM efficiency in Bi-directional ultra DWDM-PON networking centered light source by using PMD emulator by Habib Ullah Manzoor, Muhammad Zafar, Sana Ullah Manzoor, Talha Khan, Songzuo Liu, Tareq Manzoor, Saqib Saleem, Woo Young Kim, Muddassir Ali, *Results in Physics* (Accepted in 2020).

List of activities related to the proposed project.

- Co-pyrolysis of solid fuels with biomass blends.
- Co-torrefaction of solid fuels with biomass blends.
- Co-Combustion of different types of fuels.

- CFD modeling of combustion systems.
- Designing of burners for solid, liquid and gaseous fuels.
- Assisting in design, fabrication and assembling of combustion systems.
- Supervision of postgraduate students.
- Patenting of research work as co-inventor.
- Providing marketing services for prototype product.
- Collaboration with International research agencies.
- Materials Synthesis and Analysis using standard lab techniques such as FT-IR, GC, TGA, TMA, UTM, DSC, SEM, TEM, AFM, XPS, XRD, PL, etc.
- Writing of international research publications for high impact factor journals.