



### 1- Personal Information

Name : Prof. Bader S. M. Al-Anzi  
Nationality : Kuwaiti  
University : Kuwait University  
Major : Chemical Engineering  
Office/Cellular Telephone: +965-97885589 / 24633210  
Office Room Number:  
Email : [bader.alanzi@ku.edu.kw](mailto:bader.alanzi@ku.edu.kw)

#### Research Interests:

- Water Quality and wastewater treatment (industries with specific interest in refineries and domestic urban wastewater) employing latest technologies and pollution control.
- Desalination (MSF, ED and RO).
- Two phase flow/aeration technology.
- Bioengineering: Fermentation processes.

### 2- Academic Qualifications

Doctorate degree: Ph.D. in Chemical Engineering  
Loughborough University, UK  
2007.  
Ph.D. Thesis Title: Performance of a Novel Confined Plunging Liquid Jet Reactor  
Incorporating Annular Riser.  
Ph.D. (Graduate University of Waterloo, Canada  
courses) 2004.  
Master's degree: M.Sc. Chemical Engineering  
Kuwait University, Kuwait  
2000.  
M.Sc. Thesis Title: Corrosion Monitoring in Desalination Plants  
Bachelor's degree: B.Sc. in Chemical Engineering  
Arizona State University, USA  
1995.

### 3- Professional History

January 2023– Present Acting Vice Dean for Academic Affairs, Research and  
Graduate Studies, College of Life Sciences, Kuwait  
University, Kuwait.  
February 2023 Acting Dean, College of Life Sciences, Kuwait  
University, Kuwait.  
Feb. 2021 – Present Professor in chemical engineering

	Environmental Technology Management Dept. College of Life Sciences, Kuwait University, Kuwait.
Sept. 2021 – Oct. 2022	Full-time Visiting Professor Civil & Environmental Engineering- Agriculture, Life & Environmental Sciences, University of Alberta, Edmonton Canada
Jan. 2016 – Jul. 2021	Chairman Environmental Technology Management Dept. College of Life Sciences, Kuwait University, Kuwait
Dec. 31 <sup>st</sup> 2019 – Jan 14 <sup>th</sup> 2020	Acting Dean College of Life Sciences.
Oct. 2016 – Feb. 2021	Associate Professor in chemical engineering Environmental Technology Management Dept. College of Life Sciences, Kuwait University, Kuwait
Sept. 2014 – Jan. 2020	Research Affiliate Department of Mechanical Eng., Massachusetts Institute of Technology (MIT), USA
Aug. 2013 - Aug. 2014	Full-time Visiting Scientist Department of Mechanical Eng., Massachusetts Institute of Technology (MIT), USA
Sept. 2009 – Oct. 2016	Assistant Professor Environmental Technology Management Dept. College of Life Sciences, Kuwait University, Kuwait
Jan. 2004 - May. 2004	Teaching Assistant, Chemical Engineering University of Waterloo, Canada

Professional History (Research)

Jan. 2001- Dec. 2009	Research Associate – Associate Researcher Scientist Kuwait Institute for Scientific Research, Kuwait
March. 1996 - Jan. 2000	Process Engineer Doha West Power Station, Ministry of Electricity and Water

Professional History (Professional Activities)

2007 – 2009	Associate Researcher Scientist  Coordination of works at Sulaibiya Wastewater Research Plant and initiating new research ideas and proposals
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leading to projects as well as working in other projects in the same field.

2002 – 2007

Research Associate

Rehabilitation of Sulaibiya Research Plant which dealt with wastewater treatment at primary, secondary, tertiary and advanced levels. Process technologies involved chemical, physical, thermal and biological processes. The research activity focuses on the potential reuse of treated wastewater effluent.

2001 – 2002

Research Associate

Worked on a project producing bio-insecticides utilizing microbial population in a fermentation process. Operated and monitored two 100-liter fermenters (along with separator and spray dryer) with variable volumes producing toxins, using *Bacillus thuringiensis* (Bt) bacteria capable of killing certain types of Lepidoptera insects.

1996 – 2001

Process Engineer

Reading, recording, evaluating, and analyzing statistical methods of desalination, recarbonation, boilers and water treatment.

#### 4- Academic Activities

a. Peer-Reviewed Publications:  
(\*donates corresponding author)

#### **2024**

1. Awais Khalid, Pervaiz Ahmad, Abdulhameed Khan, Ahmed A.H. Abdellatif, Ahmed M. Abu-Dief, **Bader S. Al-Anzi**, Hanadi A. Almukhlifi, Heba W. Alhamdi, Abdulaziz M. Alanazi, Ohoud A. Jefri, Marwah M. Alsowayigh, Amal H. Alsehli, Suliman A. Alderhami, Riaz Ahmed, 2024. Development of CuO and CuO:Zn<sup>2+</sup> nano-oxides for dye degradation and pharmaceutical studies, *Inorganic Chemistry Communications*, 160, 111887. <https://doi.org/10.1016/j.inoche.2023.111887>.
2. Salma Shad, Aliya Ibrar, Aniq Bibi, Ambreen Ayub, Muzaffar Iqbal, Bhajan Lal, **Bader S. Al-Anzi**, Khalid Hussain Thebo, 2024. Single-step wet chemical synthesis of Co-doped Bi<sub>2</sub>O<sub>3</sub> photoanode for dye sensitized solar cells, *Emergent Materials*. <https://doi.org/10.1007/s42247-024-00627-y>
3. Yaru Hu, Yixing Gou, Dongxiang Zhang, Jiafei Jiang, **Bader Al-Anzi**, Zirui Li, 2024. Numerical simulation of Lithium extraction from salt Lake brines through force environment modulation in microfluidic channels with ion concentration polarization, *Hydrometallurgy*, 224, 106254. <https://doi.org/10.1016/j.hydromet.2023.106254>.

## 2023

4. Raja Azhar Ashraaf Khan, AM Alsaad, Afsheen Zulfqar, Muhammad Mateen, Qais M Al Bataineh, **Bader S Al-Anzi**, Hisham SM Abd-Rabboh, Ghulam Abbas Ashraf, Ahmad Telfah, Meng-Bo Luo\* 2023. A simulation study on the effect of polymer–NP interaction strength on the glass transition temperature and phase separation in polymer nanocomposites. *J Mater Sci* . <https://doi.org/10.1007/s10853-023-09074-2>.
5. Kanwal Memon, Roomia Memon, Awais Khalid, **Bader S. Al-Anzi**, Syed Tufail Hussain Sherazi, Siraj Uddin, Answer Chandio, Farah Naz Talpur, Asma Abdul Lati and Iram Liaqat, 2023. Synthesis of PVP-capped trimetallic nanoparticles and their efficient catalytic degradation of organic dyes, *RSC*, 13, 29270-29282. DOI: 10.1039/d3ra03663d
6. Mathew T. Flavin, Jenifer Fernandes, Rawan AlQabandi, Eric Adams, Jongyoon Han, **Bader Al-Anzi\***, 2023. Numerical modeling of plunging jets of brine: mass transport and implications for desalination plant outfalls, *Desalination*, 568, 116996. <https://doi.org/10.1016/j.desal.2023.116996>
7. Alazmi, A. and **Al-Anzi\***, **B.S**, 2023. Assessment of Machine Learning Algorithms in Predicting Air Entrainment Rates in a Confined Plunging Liquid Jet Reactor. *Sustainability*, 15 (18), 13802. <https://doi.org/10.3390/su151813802>
8. Ali Hyder, Muzamil Thebo, Dahar Janwery, Jamil Ahmed Buledi, Imamdin Chandio, Awais Khalid, **Bader S. Al-Anzi**, Hanadi A. Almukhlifi, Khalid Hussain Thebo, Fakhar N. Memon, Ayaz Ali Memon, Amber Rehana Solangi, Shahabuddin Memon, 2023. Fabrication of para-dimethylamine calix[4]arene functionalized self-assembled graphene oxide composite material for effective removal of 2, 4, 6-tri-Cholorphenol from aqueous environment, *Heliyon*, 9(9). <https://doi.org/10.1016/j.heliyon.2023.e19622>.
9. Runze Sun, Chicheng Ma, **Bader Al-Anzi**, Emilie Sauret, Yuantong Gu and Zirui Li\*, 2023. Influence of electrode reactions on electroosmotic flow and ion transport in a microchannel, *Microfluidics and Nanofluidics*, 27 (58). <https://doi.org/10.1007/s10404-023-02668-x>.
10. Awais Khalid, Zohaib Razzaq, Pervaiz Ahmad, **Bader S Al-Anzi**, Fida Rehman, Saleh Muhammad, Mayeen Uddin Khandaker, Gadah Albasher, Nouf Alsultan, Iram Liaqat and Danish Hayat, 2023. Visible-light promoted chemical fixation of carbon dioxide with epoxide into cyclic carbonates over doped-CeO<sub>2</sub> nanoparticles, *Materials Science in Semiconductor Processing*, 165, 107649. doi:10.1016/j.mssp.2023.107649.
11. **Bader S. Al-Anzi\*** and Jenifer Fernandes, 2023. Measurement of Total air entrainment, disentrainment and net entrainment flowrates utilizing Al-Anzi's Distraintment Ring (ADR) in a confined plunging jet reactor, *Water*, 15 (5), 835. doi: [10.3390/w15050835](https://doi.org/10.3390/w15050835)

## 2022

12. Deborah Cristina Crominski da Silva Medeiros, Pamela Chelme-Ayala, Chelsea Benally, **Bader S. Al-Anzi** and Mohamed Gamal El-Din, 2022. Review on the production, properties and performance of carbon-based adsorbents from organic sources on the removal of selected organic compounds from oil and gas industry process water, and the potential research gaps. *JEMA*, 320, 115379. doi: [10.1016/j.jenvman.2022.115739](https://doi.org/10.1016/j.jenvman.2022.115739)
13. **Al-Anzi, B.S.\***; Naik, M.-u.-d.; Ahmad, M. The Imperative Need of Metal Salt for the Treatment of Industrial Wastewater via the Synergic Coagulation-Flocculation Method. *Polymers* 2022, 14, 1651. doi: 10.3390/polym14091651
14. Abookleesh,F.L.; **Al-Anzi B.S**; Ullah A. 2022. Potential antiviral action of alkaloids. *Molecules* 2022, 27, 903. doi: 10.3390/molecules27030903

15. **Al-Anzi, Bader S.**\*, and Jenifer Fernandes. 2022. "Sensitivity Test of Jet Velocity and Void Fraction on the Prediction of Rise Height and Performance of a Confined Plunging Liquid Jet Reactor" *Processes* 10, no. 1: 160. <https://doi.org/10.3390/pr10010160>
16. Ali K. Saleh\* and **Bader S. Al-Anzi**, 2021. Remote sea-surface temperature variations (2001- 2019) in Kuwait Bay: Time series analysis in frequency and time domains. *Kuwait Journal of Science (KJS)*. 59 (3) 1-17. doi: [10.48129/kjs.12873](https://doi.org/10.48129/kjs.12873)
17. Abdullah, M.M.\* , Assi, A., Zubari, W., Mohtar, R., Abbas. H., Al Ali, Z., **Al Anzi, B.**, Sharma, V., Ma, X (2022). Revegetation of Native Desert Plants Enhances Food Security and Water Sustainability in Arid Regions. *STOTEN: Science of the Total Environment*. 806 (4) 151295. doi: [10.1016/j.scitotenv.2021.151295](https://doi.org/10.1016/j.scitotenv.2021.151295)

## 2021

18. **Bader S. Al-Anzi\***, Litty Abraham, Bamanga A., 2021. Assessment of multiple boiling of potable water utilizing household kettles for consumption. *journal of Water, Sanitation and Hygiene for Development*. 11 (6) 916. doi: [10.2166/washdev.2021.028](https://doi.org/10.2166/washdev.2021.028)
19. **Bader S. Al-Anzi\***, Asmaa Al-Rashidi, Litty M. Abraham, Jenifer Fernandes and Abdulsalam Alhazza, 2021. Brine Management from Desalination Plants for Salt Production Utilizing High Current Density Electrodialysis-Evaporator Hybrid System: A case study in Kuwait. *Desalination*, 498, 114760. doi: [10.1016/j.desal.2020.114760](https://doi.org/10.1016/j.desal.2020.114760)
20. Ishita Shrivastava\*, E. Eric Adams, **Bader Al-Anzi**, Aaron C. Chow, Jongyoon Han, 2021. Confined plunging liquid jets for dilution of brine from desalination plants, *processes*, 9 (5) 856. doi:[10.3390/pr9050856](https://doi.org/10.3390/pr9050856)
21. Meshal M. Abdullah\*, Zahraa Al Ali, Mansour T. Abdullah and **Bader Al-Anzi**, 2021. The use of very high-resolution aerial imagery to estimate the structure and distribution of the *Rhanterium epapposum* community for long-term monitoring in desert ecosystems, *Plants*, 10 (5) 977. doi: [10.3390/plants10050977](https://doi.org/10.3390/plants10050977)
22. Ali K. Saleh\*, and **Bader S. Al-Anzi**, 2021. Statistical validation of MODIS-based sea surface temperature 2 in shallow semi-enclosed marginal sea: A comparison between 3 direct matchup and triple collocation. *Water*, 13 (8), 1078. doi: [10.3390/w13081078](https://doi.org/10.3390/w13081078)
23. Jiafei Jiang, Jing Tang, **Bader Al-Anzi**, Jongyoon Han, Zirui Li\*, 2021. On the validity of Ion Selective Membrane simplification in Concentration Polarization. *AIP advances*, 11 (3), 035116-1-10. doi: [10.1063/5.0037961](https://doi.org/10.1063/5.0037961)
24. Bamanga, A. \*, Bassey B. and **Al-Anzi B.**, 2021. Preliminary Investigation of Chemical Composition of Ballast Water and Tank Sediments of Selected Ships within the Lagos Harbour, Nigeria. *African Journal of Engineering and Environment Research*, 1, 2-15. [10.37703/ajoeer.org/q12021/01](https://doi.org/10.37703/ajoeer.org/q12021/01)

## 2020

25. Ahmed Alqallaf\*, **Bader Al-Anzi\***, Meshal Alabdullah\*. 2020. Assessing the Effectiveness of Supplemental Irrigation to Improve Soil Moisture in an Arid Ecosystem with an Emphasis on Climate Change: A Case Study from the State of Kuwait. *Sustainability*. 12, 9104. doi: [10.3390/su12219104](https://doi.org/10.3390/su12219104)
26. **Al-Anzi B.**\*, Alenizi M., Abookleesh F., Aman Ullah A., and Al Dallal J., 2020. An Overview of the World Current and Future Assessment of Novel COVID-19 Trajectory, Impact and potential preventive strategies at healthcare setting. *International Journal of Environmental Research and Public Health*, 17 (19), 7016. doi: [10.3390/ijerph17197016](https://doi.org/10.3390/ijerph17197016)

27. Ahmad Al Dalla, Jehad Al Dallal\*, Waheeb E. Alnaser, Mohammed Y. Ashqar, **Bader S. Al-Anzi**, 2021. Trajectory analysis of the coronavirus pandemic and the impact of precautionary measures in the Kingdom of Bahrain, *Arab Journal of Basic and Applied Sciences (AJBAS)*, 11 (3). doi: [10.1080/25765299.2021.1886390](https://doi.org/10.1080/25765299.2021.1886390)
28. Abusam A. \*, Abusam R. and **Al-Anzi B.**, 2020. Adequacy of Logistic Models for Describing the Dynamics of COVID19 Pandemic, *Infectious Disease Modelling*, (5), 536-542. doi: [10.1016/j.idm.2020.08.006](https://doi.org/10.1016/j.idm.2020.08.006)
29. Aaron C Chow, Ishita Shrivastava, E. Eric Adams, Fahed Al-Rabaie and **Bader Al-Anzi\***, 2020. Unconfined dense plunging jets used for brine disposal, *Processes*, 8 (6), 696.
30. **Bader S. Al-Anzi\***, Sumaya Al-Hammadi, Junghyo Yoon, Jongyoon Han, 2020. Techno-economic analysis of multi-stage ion concentration polarization with recirculation for treatment of oil produced water, *Journal of Environmental Management*, (269), 110788. doi: [10.3390/pr8060696](https://doi.org/10.3390/pr8060696)
31. **Bader S. Al-Anzi\***, 2020. Effect of Primary Variables on a Confined Plunging Liquid Jet Reactor, *Water*, 12 (3), 764. doi: [10.3390/w12030764](https://doi.org/10.3390/w12030764)

## 2019

32. Aaron Chow\*, Wilbert Verbruggen, Robin Morelissen, Yousef Al-Osairi, Poornima Ponnunani, Haitham M. S. Lababidi, **Bader Al-Anzi**, E. Eric Adams, 2019. Numerical prediction of background buildup of salinity due to desalination brine discharges into the northern Arabian Gulf, *Water*, 11 (11), 2284. doi: [10.3390/w11112284](https://doi.org/10.3390/w11112284)
33. Bamanga, A.; Amaeze, N.H.; **Al-Anzi, B.** Comparative Investigation of Total, Recoverable and Bioavailable Fractions of Sediment Metals and Metalloids in the Lagos Harbour and Lagoon System. *Sustainability* 2019, 11, 4339. doi: [10.3390/su11164339](https://doi.org/10.3390/su11164339)
34. Ben Mefteh, F.; Frikha, F.; Daoud, A.; Chenari Bouket, A.; Luptakova, L.; Alenezi, F.N.; **Al-Anzi, B.S.**; Oszako, T.; Gharsallah, N.; Belbahri, L. Response Surface Methodology Optimization of an Acidic Protease Produced by *Penicillium bilaiae* Isolate TDPEF30, a Newly Recovered Endophytic Fungus from Healthy Roots of Date Palm Trees (*Phoenix dactylifera* L.). *Microorganisms* 2019, 7, 74. doi: [10.3390/microorganisms7030074](https://doi.org/10.3390/microorganisms7030074)
35. S. Choi, B. Kim, K. G. Nayar, J. Yoon, S. Al-Hammadi, J. H. Lienhard, Jongyoon Han\*, **B. Al-Anzi\***, 2019. Techno-economic analysis of ion concentration polarization desalination for high salinity desalination applications, *Water Research*, (155), 162-174. doi: [10.1016/j.watres.2019.02.023](https://doi.org/10.1016/j.watres.2019.02.023)
36. K. G. Nayar\*, J. Fernandes, R. K. McGovern, K.P. Dominguez, **B. Al-Anzi**, & Lienhard, J. H., 2019. Costs and energy needs of RO-ED crystallizer systems for zero brine discharge seawater desalination, *Desalination*, (457), 115-132. doi: [10.1016/j.desal.2019.01.015](https://doi.org/10.1016/j.desal.2019.01.015)
37. K. G. Nayar\*, J. Fernandes, R. K. McGovern, O. Laban, K. P. Dominguez, **B. Al-Anzi**, J. H. Lienhard V, 2019. Cost and energy requirements of hybrid RO and ED brine concentration systems for salt production. *Desalination*, (456), 97-120. doi: [10.1016/j.desal.2018.11.018](https://doi.org/10.1016/j.desal.2018.11.018)

## 2018

38. **Al-Anzi, B.S\***; Thomas, A. One-Dimensional Analytical Modeling of Pressure-Retarded Osmosis in a Parallel Flow Configuration for the Desalination Industry in the State of Kuwait. *Sustainability* 2018, 10, 1288. doi: [10.3390/su10041288](https://doi.org/10.3390/su10041288)

## 2017

39. **Bader Al-Anzi\***, Abdul Aziz Al-Burait, Ashly Thomas, Ong Chi Siang, 2017. Assessment and modeling of E-waste generation based on growth rate from different telecom companies in the State of Kuwait. *Environmental Science and Pollution Research*, 1(24)-27160–27174. doi: [10.1007/s11356-017-0190-0](https://doi.org/10.1007/s11356-017-0190-0)
40. C. S. Ong\*, **B. Al-Anzi**, Y. S. Ong, P. S. Goh\*, W. J. Lau, G. S. Lai, A. F. Ismail, 2017. Antifouling double skinned forward osmosis membrane with Zwitterionic brush for oily wastewater treatment, *Scientific Reports*, 7 (1), 6904. doi: [10.1038/s41598-017-07369-4](https://doi.org/10.1038/s41598-017-07369-4)
41. **B. Al-Anzi\***, C. S. Ong, 2017. Recent Development of Carbon-Based Nanomaterials and Membranes for Oily Wastewater Treatment: A Review, *RSC Advances*, 34 (7), 20981 – 20994. doi: [10.1039/C7RA02501G](https://doi.org/10.1039/C7RA02501G)
42. C.S. Ong\*, W. J. Lau\*, **B. Al-Anzi**, A. F. Ismail, 2017. Photo degradation stability study of PVDF- a PEI- based membranes for oily wastewater treatment process. *Membrane Water Treatment*. 3 (8), 211-223. doi: 10.12989/mwt.2017.8.3.211

## 2016

43. Al-Sharrah G. \*, Lababidi H. and **Al-Anzi B**, 2016. Environmental Ranking of Desalination Plants: The Case of the Arabian Gulf. Special issue dedicated to ‘Mathematical Approaches to Environmental Chemistry. *Toxicological & Environmental Chemistry*, 7-8 (99), 1054-1070. doi: [10.1080/02772248.2016.1249369](https://doi.org/10.1080/02772248.2016.1249369)
44. Bumjoo Kim, Rhokyun Kwak, Hyukjin J. Kwon, Van Sang Pham, Minseok Kim, **Bader Al-Anzi**, Geunbae Lim & Jongyoon Han\*, 2016. Purification of High Salinity Brine by Multi-Stage Ion Concentration Polarization Desalination, *Scientific Reports*, (6), 31850. doi: [10.1038/srep31850](https://doi.org/10.1038/srep31850)
45. **Bader S. Al-Anzi\***, Ashly Thomas, Jenifer Fernandes, 2016. Lab scale assessment of power generation using Pressure Retarded Osmosis from wastewater treatment plants in the State of Kuwait. *Desalination*, (396), 57-69. doi: [10.1016/j.desal.2016.06.005](https://doi.org/10.1016/j.desal.2016.06.005)
46. Banchik L. D., Weiner A. M., **Al-Anzi B.**, and Lienhard V J. H\*, 2016. System scale analytical modelling of forward and assisted forward osmosis mass exchangers with a case study on fertigation. *Journal of Membrane Science*, (510), 533-545. doi: [10.1016/j.memsci.2016.02.063](https://doi.org/10.1016/j.memsci.2016.02.063)
47. Alenezi, R., Al-Anzi, B. and Alanezi, Y. , Kinetic Models of Transesterification of Vegetable Oils with Methyl Ethanoate under Sub/Supercritical Conditions. , *Energy Sources. Part A. Recovery, Utilization, and Environmental Effects* (0090-8312) , **38** , 18 , 2670-2678 , 2016. doi:[10.1080/15567036.2015.1115926](https://doi.org/10.1080/15567036.2015.1115926)

## 2011 – 2015

48. **Al-Anzi B.**, Abusam A\*. and Khan A., 2015. Evaluation of Temporal Variations of Jahra (Kuwait) Ambient Air Quality Using Multivariate Techniques. *Environmental Technology & Innovation*, (5), 225 - 232. doi: [10.1016/j.eti.2016.04.003](https://doi.org/10.1016/j.eti.2016.04.003)
49. Alenezi R. \* and **Al-Anzi B. \***, 2015. Kinetic Models of Transesterification of vegetable oils with methyl ethanoate under sub/supercritical conditions. *Energy sources, Part A: Recovery. Utilization, and Environmental Effects*, 38 (18), 2670-2678. doi:[10.1080/15567036.2015.1115926](https://doi.org/10.1080/15567036.2015.1115926)
50. Alenezi R. \* and **Al-Anezi B.**, 2015. An assessment of ambient air quality in two major cities in the state of Kuwait. *International Journal of Engineering & Technology (IJET)*, 4 (2) 358-368. doi: 10.14419/ijet.v4i2.4550

51. Abulbasher S., Al-Rashedi H. and Abusam A., **Al-Anzi B** 2014. Comparative Performance of three Bench-scale Systems (Absorption/Adsorption unto Natural Fertilizer media, Treatment in Aerobic Bioreactor and Treatment in Partial Aerobic fixed-bed Bioreactor) refining Effluent of conventional Septic Tank Treating Domestic Wastewater. *Academic Journal of Sciences (AJS)*, 03(03):123–135.
52. AlEnezi, R. \* and **Al-Anzi, B.**, 2013. Kinetic Mechanism of Transesterification of Vegetable Oil with Supercritical Methanol. *Journal of Engg. Research*, (1), 81-96.
53. Alenezi R. \*, **Al-Anzi B.**, Abusam A. and Ashfaque A., 2012. Seasonal Influence on the Ambient Air Quality in Al Jahra City for Year 2010. *Journal of Environmental Protection*, (3), 1711-1718. doi: [10.4236/jep.2012.312186](https://doi.org/10.4236/jep.2012.312186)
54. **Al-Anzi, B.\*** and Abusam, A., 2012. Assessment of wastewater reuse in Kuwait and its impact on amounts of pollutants discharged into the sea. *Journal of Environmental Protection*, (3), 935 - 939. doi: [10.4236/jep.2012.328108](https://doi.org/10.4236/jep.2012.328108)
55. **Al-Anzi B**, Abusam A, Shahalam A (2012) Wastewater Reuse in Kuwait and Its Impact on Amounts of Pollutants Discharged into the Sea. *J Environ Anal Toxicol* S3:003. doi:10.4172/2161-0525.S3-003
56. Abusam, A.\* and **Al-Anzi, B.**, 2011. Comparison between the Irrigation Quality of Conventional Tertiary and UF+RO Advanced Treated Wastewaters. *Agricultural Science*, (2), 526-53. doi:10.4236/as.2011.24068

b. Other academic activities:

#### **Manuscripts under Review/Preparation**

1. Leilei Xing, Zirui Li, Dongxiang Zhang, Runze Sun, Shanshan Li, **Bader Al-Anzi**, and Yixing Gou, 2023. Force environment modulation for ion concentration polarization-based enrichment of low-abundance analytes, *submitted to chemosensors*.
2. **Bader Al-Anzi\***, 2022. Performance of LRM vs HRM Utilizing ED-Evaporator Hybrid System in Treating Reject Brine From Desalination Plants and Its Effect on The Quality of Produced Salt and effluent Concentration, *under preparation*.

#### **Patents**

##### *i. US Patents*

1. **Bader Shafaqa Al-Anzi**. Effluent Dispenser System. KU, Kuwait, assignee. Patent US 11,649,624 B1. May16, 2023
2. **Bader Shafaqa Al-Anzi**. Zero Pollution Hybrid Desalination and Energy Production System. KU, Kuwait, assignee. Patent US 11,396,469 B2. July 26, 2022.
3. John H. Lienhard, Kishor Govind Nayar, Ronan K. McGovern and **Bader Al-Anzi**, Concentrating Aqueous Solutions Via Hybridizing Electrodialysis and Desalination Techniques. U.S. **MIT, Cambridge, USA**, assignee. Patent US 10,626,037 B2. April 21, 2020.
4. **Bader Shafaqa Al-Anzi**. Apparatus for Measuring Dis-entrainment Rate of Air. KU, Kuwait. Patent US 10,712,248 B2. July 14, 2020.
5. Kim, Bumjoo, Jongyoon Han, Rhokyun Kwak and **Al-Anzi, Bader Shafaqa**. "Purification of ultra-high saline and contaminated water by multi-stage ion concentration polarization (ICP) desalination. U.S. **MIT, Cambridge, USA**, assignee. Patent 10,252,924 B2. April 9, 2019.
6. **Al-Anzi Shafaqa Bader**. Method of Recycling Brine from a Multi-Stage Flash Desalination Plant. KU, Kuwait. Patent US 10,125,039 B2. Nov 13, 2018.



7. **Al-Anzi Shafaqa Bader.** Cooling System for Patients with Fever. **KU**, Kuwait. Patent US 10,045,880 B2. August 14, 2018.
8. **Al-Anzi Shafaqa Bader.** Portable Expanding Barrier for Muslim Worshippers. Bader Al-Anzi, assignee. Patent US 9,282,843 B1. March 25, 2016.
9. **Al-Anzi Shafaqa Bader.** Mobile Buoyant Aerator. Bader Al-Anzi, assignee. Patent US 9,193,616 B2. November 24, 2015.
10. **Al-Anzi Shafaqa Bader.** Encapsulated Fire Extinguishing Agents. Bader Al-Anzi, assignee. Patent US 9,149,672 B2. October 6, 2015.
11. **Al-Anzi Shafaqa Bader.** Rotating Disk Aerator. Bader Al-Anzi, assignee. Patent US 9,073,016 B2. July 7, 2015.
12. **Al-Anzi, Bader Sh.** Electrical Outlet Safety Device. Bader Al-Anzi, assignee. Patent US 8,956,168 B2. 17 Feb. 2015.
13. **Alenzi, Bader Sh.** Buoyant Aerator with Support Legs. Bader Al-Anzi, assignee. Patent US 8,413,968 B2. 25 Mar. 2014.
14. **Al-Anzi, Bader Sh.** Integrated Aeration System. Kuwait University, assignee. Patent US 8,668,187 B2. 11 Mar. 2014.
15. **Al-Anzi, Bader Sh.** Gas Burial Disposal Capsules. Bader Al-Anzi, assignee. Patent US 8,663,082 B2. 7 Jan. 2014.
16. **Alenzi, Bader Sh.** Aerator Air Distribution Manifold. Bader Al-Anzi, assignee. Patent US 8,622,370 B1. 4 March. 2014.
17. **Alenzi, Bader Sh.** Anchored Aerator. Bader Al-Anzi, assignee. Patent US 8,413,968 B2. 7 Jan. 2014. Print.
18. **Alenzi, Bader Sh.** Buoyant Aerator Array with Remote Air Supply. Bader Al-Anzi, assignee. Patent US 8,740,194 B1. 03 Jun. 2014.
19. **Al-Anzi, Bader Sh.** Water Aeration Using a Compressed Gas Container. Bader Al-Anzi, assignee. Patent US 8,512,561 B2. 20 Aug. 2013.
20. **Al-Anzi, Bader Sh.** Water Aeration System Utilizing Renewable Source. Bader Al-Anzi, assignee. Patent US 8,413,966 B1. 9 Apr. 2013.
21. **Al-Anzi, Bader Sh.** Water Aeration Capsules. Bader Al-Anzi, assignee. Patent US 8,413,968 B2. 9 Apr. 2013.
22. **Bader Shafaqa Al-Anzi.** Confined Plunging liquid jet reactor with energy recovery. **KU**, Kuwait. June 2022.
23. **Bader Shafaqa Al-Anzi.** Ventilator and Inflation Bag Operation of Ventilator. **KU**, Kuwait. Publication number 20230166063. Nov. 2021.
24. **Bader Shafaqa Al-Anzi**, Sumaya Al-Hammadi, Junghyo Yoon and Jongyoon Han. **MIT, USA.** Multi-stage ion separator with recirculation. Kuwait. Application number WO/2020/112719. 04 Jun. 2020.
25. **Bader Shafaqa Al-Anzi.** Bathtub with water use indicator and limiter. **KU**, Kuwait. Application number 15646194. 04 June 2020.
26. **Bader Shafaqa Al-Anzi.** Confined Plunging Liquid Jet Reactor with Modified Downcomer. **KU**, Kuwait. Application number 20200330934. 22 Oct. 2020.
27. **Bader Shafaqa Al-Anzi.** Multistage Aeration System. **KU**, Kuwait. Application number WO/2020/112719. 25 May 2017.

*ii. European Patents*

28. **Alenzi, Bader Sh.** Water Aeration System Using Renewable Energy Source. Bader Al-Anzi, assignee. **Patent EP 2 617 482 A1.** 24 Jul. 2013.

29. **Al-Anzi, Bader Sh.** Water Aeration Capsules. Bader Al-Anzi, assignee. **Patent EP 2 561 752 A1.** 27 Feb. 2013.

### Conference proceedings

1. **Bader S. Al-Anzi**, Jenifer Fernandes, Rawan AlQabandi and Amina Alsoulah, Assessing the effects of reject brine from desalination on air entrainment rate utilizing CPLJR, oral presentation at Ecosystems, Water & Food Security in a Changing World: Challenges & Solutions in Arid Regions, Aug 2021.
2. Aaron C. Chow, Ishita Shrivastava, **Bader S. Al-Anzi**, Jongyoon Han and E. Eric Adams, Use of plunging liquid jets for the dilution of reject brine from desalination plants, oral presentation at Ecosystems, Water & Food Security in a Changing World: Challenges & Solutions in Arid Regions, Aug 2021.
3. Ishita Shrivastava, Aaron C. Chow, E. Eric Adams, **Bader Al-Anzi** and Jongyoon Han. Dilution of plunging jets used for desalination brine disposal, oral presentation at the 1<sup>st</sup> IAHR Young Professional Congress, 17-18 November 2020.
4. Ahmed Alqallaf, **Bader Al-Anzi**, A water budget model for an arid ecosystem: a case study from Kuwait with emphasis on climate change, oral presentation in 3<sup>rd</sup> Kuwait International Conference on Life Sciences, Nov 27-29, 2018, Kuwait
5. Ali K. Saleh, **Bader S. Al-Anzi**, Abdallah Abusam, The Assessment and Treatment of Process Wastewater Generated from Ceramic and Porcelain Tiles Industry: A Case Study in Kuwait, oral presentation in 3<sup>rd</sup> Kuwait International Conference on Life Sciences, Nov 27-29, 2018, Kuwait.
6. Fahad Jamal Al-Rabaie, Eric Adams, **Bader Al-Anzi**, Plunging Liquid Jet Reactor (PLJR) as Brine Dispenser into Seawater Shoreline: A Case Study of Kuwait, oral presentation in 3<sup>rd</sup> Kuwait International Conference on Life Sciences, Nov 27-29, 2018, Kuwait.
7. Sumaya Al-Hammadi, Jongyoon Han, **Bader Al-Anzi**, Techno-economic modeling of ICP treatment for high salinity effluents in the State of Kuwait, oral presentation in 3<sup>rd</sup> Kuwait International Conference on Life Sciences, Nov 27-29, 2018, Kuwait.
8. K. G. Nayar, R.K. McGovern, J. Fernandez, **B. Al-Anzi**, and J.H. Lienhard V, "RO-ED Hybrids for Salt Production," EU-Salt, oral presentation in European Salt Producer's Association Meeting, Basel, Switzerland, 8 March 2018.
9. Kishor Govind Nayar, Jenifer Fernandes, Ronan K. McGovern, Kyle Dominguez, **Bader Al-Anzi**, John H. Lienhard V, Costs and energy needs of RO-ED hybrid systems for zero brine discharge seawater desalination", International Desalination Association World Congress, IDA17WC-57925, 15-20 October 2017, Sao Paulo, Brazil.
10. **Bader Al-Anzi**, Ashly Thomas "Application of PRO for the Assessment of Power Generation from Al-Sulaibiya wastewater treatment plant in the State of Kuwait", oral presentation in (ICWEE/5) 2017, Feb 28- March 2, 2017, Sharjah, UAE.
11. **Bader S. Al-Anzi**, 2016. Feasibility of using coagulation for treatment of wastewater generated from a Kuwait tiles industry. ICEEE5016, UK
12. Ishita Shrivastava, Aaron C. Chow, **Bader Al-Anzi**, Tanuspong Pokavanich, Yousef Al-Osairi, E. Eric Adams, "Outfall design for desalination plants in northwestern Arabian gulf". International Symposium on Outfall Systems, IAHR-IWA Joint Committee on Marine Outfall Systems, May 10-13, 2016, Ottawa, Canada.
13. Aaron C. Chow, Ishita Shrivastava, E. Eric Adams, Poornima Ponnunani, **Bader Al-Anzi**, Haitham M. S. Lababidi, Tanuspong Pokavanich, Yousef Al-Osairi. "Environmental assessment to design Kuwaiti offshore desalination brine outfalls discharging into the northwestern Arabian Gulf". 2<sup>nd</sup> International conference on desalination and environment (ICODE), Jan 23-26, 2016, Doha, Qatar.

14. Chung H. W., Nayar K. G., Chehayeb K., **Al-Anzi B.** and Lienhard V J. H., “Thermodynamic Analysis of Seawater Brine Management Processes. Seawater Brine Management Processes,” 2<sup>nd</sup> International Conference on Desalination and Environment, Doha, Qatar, Jan. 2016.
15. **Al-Anzi, Bader**, Al-Ajmi, Dalal, 2016. Assessment of E-waste in the state of Kuwait in the year 2011. Electronics Goes Green (EGG).
16. **Al-Anzi B**, Abulbasher **S.**, Al-Rashedi H. and Abusam A., 2014. Comparative Performance of three Bench-scale Systems (Absorption/Adsorption unto Natural Fertilizer media, Treatment in Aerobic Bioreactor and Treatment in Partial Aerobic fixed-bed Bioreactor) refining Effluent of conventional Septic Tank Treating Domestic Wastewater. *International Journal of Arts and Sciences (IJAS)*, Boston, MA, USA.
17. **Al-Anzi B.**, Al-Nabhan M., Khan A. and AlHazza A., 2014. Role of activators on the thermochemical stability of aluminide coatings low carbon steel. *41<sup>st</sup> Int. Conf. on Metallurgical Coatings and Thin Film (ICMCTF)*, San Diego, CA, USA.
18. Al-Hajiri, F., **Al-Anzi, B.**, Shahalam, A. and El-Hosseiny, M., 2009. Assessment of H<sub>2</sub>S Removal and Production in Raw Sewage: A Case-Study in Pump-Station. *ASCEE-3: Third Ain-Shamas International Conference on Environmental Engineering*, Cairo, Egypt.
19. **Al-Anzi, Bader**, 2008. Corrosion Monitoring in the Desalination Plant. *Saudi International Innovation Conference* in April 2008, Leeds, UK.
20. **Al-Anzi, B.**, 2007. Mechanisms of a confined plunging liquid jet reactor. *Saudi Innovation Conference*, University of Newcastle-upon-Tyne, Newcastle, UK.
21. **Al-Anzi, B.**, 2007. Effect of downcomer submergence on air entrainment rate utilizing confined plunging liquid jet reactor. *3<sup>rd</sup> International Congress of Chemistry and Environment (ICCE07)*, Kuwait.
22. **Al-Anzi, B.**; Cumming, I.W. and Reilly, C.D. 2006. Air entrainment rate in confined plunging liquid jet reactor. *10<sup>th</sup> Int. Conf. on Multiphase Flow in Industrial Plant*, Tropes (VV), Italy.

#### **Invited Talks/ Keynote/Plenary Speaker**

23. **Bader Al-Anzi (External Examiner Seminar)**, “Next Generation Brine Desalination and Management for Efficiency, Reliability, and Sustainability”, plenary speaker at Gas Processing Center & Qatar University, Industrial wastewater treatment & management, Qatar, May 25<sup>th</sup> 2023.
24. **Bader Al-Anzi (Plenary Speaker)**, “Brine management utilizing innovative technologies”, plenary speaker at Gas Processing Center & Qatar University, Industrial wastewater treatment & management, Qatar, May 25<sup>th</sup> 2023.
25. **Bader Al-Anzi (Panel Speaker)**, “Creativity and Innovation”, Kuwait university conference “Bringing Science Together: Innovation & Sustainability”, March 14<sup>th</sup> 2023.
26. **Bader Al-Anzi (Plenary Speaker)**, “Next Generation Brine Desalination and Management for Efficiency, Reliability and Sustainability”, speaker at workshop, Treatment and management of rejected-brine and salts from desalination plants, Qatar, January 23<sup>rd</sup> 2023.
27. **Bader Al Anzi (Speaker)**, The outcomes of collaboration between Kuwait University and KFAS, The 1<sup>st</sup> Scientific Research Conference, Kuwait University. March 8<sup>th</sup> 2022.
28. **Bader Al Anzi (Speaker)**, Technologies to enhance production of fresh water in Nigeria for both drinking and agriculture applications, Speaker at Workshop, R& D and Innovation in nation building- the paradigm shift for the 21<sup>st</sup> Century Nigerian Tertiary Education Institution (TEI), Dubai, 19-12-2019.
29. **Bader Al Anzi (Speaker)**, how to promote and apply High Impact Innovation Research in Kuwait: Lessons learned from Signature Project, Public seminar, KFAS, 27-03-2019.

30. **Bader Al Anzi (Speaker)**, Next Generation Brine Desalination and Management for Efficiency, Reliability, and Sustainability, International Conference on Energy, Environment and Economics (ICEEE 2018) was held at Heriot-Watt University, Riccarton, Edinburgh, EH14 4AS, UK, 14- 16 August 2018.
31. **Bader Al Anzi (Speaker)**, 6th International Conference & Exhibition on Health, Safety and Environment, 12-14 February 2018 at Kuwait City, Kuwait.
32. **Bader Al Anzi (Speaker)**, Power generation from wastewater streams utilizing Pressure Retarded Osmosis in the State of Kuwait and application of zero- and one-dimensional model expressions, Invited Speaker at BITS 8<sup>th</sup> Annual Global Congress of Catalysis-2017, October 20-22, 2017 at Shanghai, China.
33. **Bader Al Anzi (Speaker)**, Brine management and energy recovery methods: Case study in the state of Kuwait, Kuwait Infrastructure week, 29- 31 October 2017 at Kuwait city, Kuwait.
34. **Bader Al Anzi (Speaker)**, A 1D modeling study of Brine management and power generation using Pressure Retarded Osmosis in the State of Kuwait, Invited Speaker at 7<sup>th</sup> International Symposium on Energy, August 13-17, 2017 at Manchester, UK.
35. **Bader Al Anzi (Speaker)**, Energy recovery from wastewater streams utilizing Pressure Retarded Osmosis in the State of Kuwait, Invited Speaker at International conference on oil, gas and Petrochemistry, April 03-05, 2017 at Dubai, UAE.
36. **Bader Al Anzi (Speaker)**, presentation about the signature project to MEW, Kuwait, resulting in formal collaboration agreement (Feb 2016).
37. **Bader Al Anzi (Speaker)**, Presentation about the signature project to Ministry of Public Works, Kuwait, May 25th, 2016.
38. **Bader Al Anzi (Speaker)**, ‘ZLD desalination application in Kuwait, benefits to Al-Kout’, presentation to Al- Kout Industrial Projects Company, Kuwait, 4th Oct 2016.

### Other General Publications

1. **Al-Anzi B.**, Final Report, September 2022, “Novel downcomer design for an improvised Confined Plunging Liquid Jet Reactor (CPLJR) system as a brine dispenser”, Kuwait University collaborative research project.
2. **Al-Anzi B.**, Han J., Final Report, March 2022, “Plunging Liquid Jet reactors for dilution and aeration of brine discharged from seawater desalination plants, KU-MIT CPLJR collaborative research project.
3. **Al-Anzi B.**, Semi-Annual Report, July 2021, Shamal Az Zour-Kuwait University collaborative research project.
4. **Al-Anzi B.**, Han J., Annual Report, May 2020, KU-MIT CPLJR collaborative research project.
5. **Al-Anzi B.**, Han J., Annual Report, Oct 2020, KU-MIT CPLJR collaborative research project.
6. **Al-Anzi B.**, Semi-Annual Report, Oct 2020, Shamal Az Zour-Kuwait University collaborative research project.
7. **Al-Anzi B.**, Han J., Lababidi, H., Al-Adwani H., Lienhard J., Gleason K., White J., Adams E., Pham V. S., Annual Report, April-2020, KU-MIT signature project
8. **Al-Anzi B.**, Report as an initiative in establishing a control disease center titled “Epidemic and Outbreak Control Center (EOCC), Report/Proposal, Submitted to Kuwait Parliament, 15 April 2020.
9. **Al-Anzi B.**, Han J., Lababidi, H., Al-Adwani H., Lienhard J., Gleason K., White J., Adams E., Pham V. S., Semi-Annual Report, June-2019, KU-MIT signature project.

10. **Al-Anzi B.**, Han J., Lababidi, H., Al-Adwani H., Lienhard J., Gleason K., White J., Adams E., Pham V. S., Annual Report, Dec-2018, KU-MIT signature project.
11. **Al-Anzi B.**, Han J., Lababidi, H., Al-Adwani H., Lienhard J., Gleason K., White J., Adams E., Pham V. S., Semi-Annual Report, June-2018, KU-MIT signature project.
12. Book: **Bader Shafaqa Al-Anzi**, Ashly Thomas, Jenifer Fernandes, Power Generation using Pressure Retarded Osmosis from wastewater treatment plants in the State of Kuwait, Noor Publishing, Germany, 2018.
13. **Al-Anzi B.**, Han J., Lababidi, H., Al-Adwani H., Lienhard J., Gleason K., White J., Adams E., Pham V. S., Annual Report, Dec-2017, KU-MIT signature project.
14. **Al-Anzi B.**, Han J., Lababidi, H., Al-Adwani H., Lienhard J., Gleason K., White J., Adams E., Pham V. S., Semi-Annual Report, June-2017, KU-MIT signature project.
15. Chapter: S. Choi, B. Kim, J. Yoon, J. Han, **B. Al-Anzi**, J. White, S. V. Pham, Enhanced Water Desalination in Electro membrane Systems, A Chapter- A MEMS, Field-Emitter, Thermal, and Fluidic Devices, **103** MTL ANNUAL RESEARCH REPORT 2017.
16. **Al-Anzi B.**, Han J., Lababidi, H., Al-Adwani H., Lienhard J., Gleason K., White J., Adams E., Annual Report, Dec -2016, KU-MIT signature project.
17. **Al-Anzi B.**, Han J., Lababidi, H., Al-Adwani H., Lienhard J., Gleason K., White J., Adams E., Semi-Annual Report, June-2016, KU-MIT signature project.
18. **Al-Anzi B.**, Han J., Lababidi, H., Al-Adwani H., Al-Shyaji K, Ettouney H., Lienhard J., Gleason K., White J., Adams E., Annual Report, Dec 2015, KU-MIT signature project.
19. Chapter: Chi Siang Ong, **Bader S. Al-Anzi**, Woei Jye Lau, Recent developments of carbon nanomaterials- incorporated membranes, carbon nanofibers and carbon membranes for oily wastewater treatment, Elsevier, Chapter 11 in Carbon-Based Polymer Nanocomposites for Environmental and Energy Applications, 261-280.
20. **Bader S. Al-Anzi**, on "Review of Wastewater Treatment Technologies" in 2003. Technical report, General activity sponsored by KISR, WT012G.
21. Chapter: **Bader S. Al-Anzi**, Khawla A. Al-Shayji, Abdul Rehman Khan, Corrosion monitoring in the desalination plants, hydrology and water resources, eBook ISBN9781003078845, 12 pages.

## RESEARCH PROJECTS:

### Completed Projects

Sl. No.	Title	Sponsor	Budget (\$)	Status/Year
1	Principle Investigator (PI) "Novel downcomer design for an improvised Confined Plunging Liquid Jet Reactor (CPLJR) system as a brine dispenser"	Kuwait University	\$13,125	April 2022 – Oct. 2022
2	Principle Investigator (PI) "Plunging liquid jet reactors for dilution and aeration of brine discharged from seawater desalination plants"	KFAS	\$ 617,250	May, 2019 – April, 2022
3	Principle Investigator (PI), "Sustainable Zero discharge seawater desalination in the state of Kuwait"	Shamal Az-Zour Al-Oula Power and Water Company K.S.C.	\$ 82,185	Feb. 2020 – July. 2021

4	Principle Investigator ( <b>PI</b> ) “Next Generation Brine Desalination and Management for Efficiency, Reliability, and Sustainability”	KFAS	\$ 5,500,000 (5.5 Million)	May 2015 -May 2020
5	Project Investigator ( <b>PI</b> ) manufacturing and implementing a patented aerator system by American Aerators Company, Monticello, MN, USA.	Sabah Al-Ahmad Center for Creativity and Giftedness (SAC)	\$ 88,000	July 2012 –Sept, 2014
6	Project Leader ( <b>PI</b> ) “Plunging Liquid Jet Reactor”.	Kuwait University	\$ 6,563	March 2011 – Oct. 2012
7	Project Leader ( <b>PI</b> ) “Nonconventional aeration utilizing Confined Plunging Liquid Jet Reactor (CPLJR)”	Kuwait University	\$ 7,000	April 2010 - April, 2011
8	Task Leader ( <b>TL</b> ) for the ongoing project “Performance Evaluation of Rigga Secondary Treatment System”	KISR	\$346,073	2009
9	Team Member ( <b>Co-PI</b> ) for the ongoing project “Nitrogen and Phosphorus Reduction/Removal from RO Brine Wastewater-Bench and Pilot Scale Study	KISR	\$237,476	2009

### Ongoing

Sl. No.	Title	Sponsor	Budget (\$)	Status/Year
1	Mitigation of Environmental Impact By Brine Discharge From Desalination Plants Utilizing Low Resistance ED-Crystallizer Hybrid System	KU	40,361	April 2023 - Present

### Proposals

Sl. No.	Title	Sponsor	Estimated Budget
1	Application of remote sensing techniques for restoration and management of land cover in arid ecosystem: Assessment of climatic changes patterns, State of Kuwait	KFAS	\$ 709,326
2	Assessment of produced water from oil production in Nigeria	PTDF, Nigeria	Under review
3	Sustainable Zero discharge desalination in the state of Kuwait	EPA- JS Group	\$ 244,375

4	Application of remote sensing techniques for restoration and management of land cover in arid ecosystem: Assessment of climatic changes patterns, State of Kuwait	PTDF, Nigeria	Under review
5	Advanced Water Purification and Monitoring Technology	PTDF, Nigeria	Under review
6	Assessment of ED for salt production in the state of Kuwait: A case study for Al-Kout industrial project company	Al-Kout	\$ 240,000
7	Assessment of wastewater effluent (black liquor) from TATA industry.	MIT-Kuwait Center & KFAS	\$ 280,000
8	Research and Development of Ceramic Pot Filter Technology for Safe Water and Humanitarian Service	MIT-Kuwait center & KFAS	\$ 280,000
9	Treatment of industrial wastewater from Kuwait tiles factory.	MIT-Kuwait center & KFAS	\$ 280,000
10	Domestic Wastewater Treatment Utilizing Confined Plunging Liquid Jet Bioreactor.	KISR	\$169,671
11	Wastewater Treatment Employing Wetland Technology.	KISR	\$ 273,362

## 5- Community and University Services

### I. Community Services

- **Kuwait Water Challenges:**

Kuwait's coast is located in one of the shallowest and most saline sections of the Arabian Gulf, which will bring about many challenges in the seawater desalinations. Discharge from Kuwait's desalinations plants returns high salinity brines back to the Gulf and may contain other contaminates, such as, chlorine and chromium, resulting in very serious environmental impacts to the Gulf region. My contribution was instrumental in the development of proposals and the formation of the collaborative teams from KU & MIT that led to the signature/mega projects collaboration with MIT's Mechanical, Chemical, Civil and Electrical & Bioengineering Departments to the use of innovative technologies on the management of the local (Kuwait) desalination brines and wastewaters to mitigate their impact on the marine environment, water security and saving of scarce water resources as follows,

- Converting **reject brine** into wet/edible salt and low salinity water utilizing Electrical desalination processes (ED/ICP)-Crystallizer and HPRO-Crystallizer hybrid systems to achieve Zero-Liquid-Discharge system (ZDL).
- Generating green energy utilizing PRO/RED processes through indirectly mixing **rejected brine and wastewater** streams.
- Improving desalination performance for increased reliability.
- Introducing Plunging Liquid Jet Reactor technology for Dilution and Aeration of brine being discharged by the seawater desalination plants.

- **Solid Waste Management in the State of Kuwait:**

One of my significant community contributions is in the area of solid waste management with a special emphasis on the assessment of electronic waste in the state of Kuwait that was first introduced locally in June 2011 as shown in the press release.

- **Establishment of Epidemic and Outbreak Control Center (EOCC) initiative**

I initiated and drafted a proposal to establish an **Epidemic Outbreak Control Centre (EOCC)** that is to be run and managed under highly qualified and competent team of local scientists and scholars to achieve self-sufficient EOCC, a Centre of Excellence, of special interest to Kuwait that enables the country to find solutions for potential microbial epidemics affecting its people and reduce its dependency on outsiders to provide solutions or supplies during such challenging situations. This initiative has been officially submitted to the Kuwaiti parliament for further actions.

- **International Invention Fairs in the Middle East**

Represented my country and employer (KU) in three consecutive international invention fairs that were held in Kuwait (Appendix 6G). I participated with inventions resulted in winning seven medals (four golden, 2 silver and one bronze medals).

#### **Specially invited lectures to serve the local community**

<b>Organization</b>	<b>Title</b>	<b>Year</b>
Alnajat High School	“Water Recourse and Pollution”	2021
Kuwait University, Research Sector	How to promote and apply High Impact Innovation Research in Kuwait: Lessons learned from Signature Project, Public seminar	2019
Kuwait University, Research Sector	The First Kuwait University Inventions Forum: Present and Future	2019
Kuwait Foundation for Advancement of Science (KFAS)	Next Generation Brine Desalination and Management for Efficiency, Reliability and Sustainability Seminar	2019
Universal American School	Water and Water Pollution	2014
Water Association in Kuwait	Water Quality and Necessity	2011
GUST (Gulf University for Science and Technology)	Wastewater Treatment	2012
Alnajat High School	Environmental Impact	2012 & 2014
Alqayrawan High School	Global Warming	2008

#### **Television Interviews/Apearances**

<b>Channel/Program</b>	<b>Topic/Subject</b>	<b>Date</b>
تلفزيون الكويت مسارات ثقافية	Recent patent on “Effluent Dispenser System”	05/2023
قناة الكويت	Recent Scientific Achievements	10/2022
قناة القبس	Brine Management & Patents	10/2022
مساء الخير يا كويت	Scientific Achievements	10/2022
قناة الجزيرة	Brine Management & New Patent	10/2022
“Good Morning Kuwait”, KTV2	New Patent & KU Disting. Researcher Award	03/2022
“Hala Kuwait” KTV2, Kuwait TV	Desalination and how my new patent help on this.	04/2021



"SunShine" KTV2, Kuwait TV	New ICP patent registered in MIT, Boston, USA.	04/2021
"سالفه" online interview	ICP Patent.	04/2021
"مساء الخير يا كويت"	Interview about PLJR international project and new the patent that received in 2020.	01/2021
"تلفزيون المجلس"	How the new patent "Measuring Dis-entrainment Rate" works.	07/2020
برنامج عالسيف "العدالة"	Details about Epidemic and Outbreak Control Centre (EOCC) initiative.	04/2020
"المجلس"	About the "Establishment of Epidemic and Outbreak Control Centre (EOCC) initiative".	04/2020
"Hala" Kuwait, KTV2, Kuwait TV.	About ETM department and my work at Kuwait University.	10/2019
Good evening Kuwait, Kuwait TV.	New patent obtained from MIT "multi-stage ion concentration polarization (ICP) desalination".	2019
تلفزيون المجلس "مجلس الأمة الكويتي"	Details about "Electrical Outlet Safety Device" patent.	12/2018
"Hala" Kuwait, KTV2, Kuwait TV.	About international projects and research in Kuwait University.	10/2018
"إشراقه وطن" Kuwait TV.	About my awards on research and patents.	01/2016
Albawadi.	My achievements and ETM department.	10/2017
"الركيزة" Kuwait TV	About "Electrical Outlet Safety Device" patent.	01/2016
Alymq8.	Details about "Electrical Outlet Safety Device" patent.	2018
Academia.	About my award on "Water Aeration Capsules" patent.	2012

## II. University Services

1. Acting Vice Dean, Academic Affairs & Research, CLS, KU
2. ETM Chairman (January 2016 - 2021).
3. Member or convener of committee services as summarized in table 1.

**Table 1: Committees at (a) Departmental Level, (b) College Level**

### (a) Departmental Level

Responsibility	Department/Univ.	From - To
<b>Convener:</b> Laboratory and Instrumentation	ETM, KU	2022 -2023
<b>Member:</b> Laboratories	ETM, KU	2022-2023
<b>Member:</b> Assessment and quality control and academic accreditation	ETM, KU	2022-2023
<b>Chairman</b>	ETM, KU	2016 – 2021
<b>Convener:</b> Scholarship	ETM, KU	2016 – 2021
<b>Convener:</b> Strategic Planning	ETM, KU	2016 – 2021
<b>Convener:</b> Research and Graduate Studies	ETM, KU	2016 – 2019
<b>Convener:</b> Scientific Affairs	ETM, KU	2009-2011, 2016 – 2021
<b>Convener:</b> Appointments	ETM, KU	2016 – 2021

<b>Convener:</b> College Plan & Departmental Activities	ETM, KU	2015 – 2021
<b>Convener:</b> Students Affairs and schedule	ETM, KU	2016-2017, 2019-2020
<b>Convener:</b> Accreditation & Academic Assessment	ETM, KU	2011 – 2013
<b>Convener:</b> Laboratory and Instrumentation	ETM, KU	2009 – 2010
<b>Member:</b> Accreditation & Academic Assessment	ETM, KU	2015 – 2021
<b>Member:</b> Recruitment and Employment	ETM, KU	2015 – 2016, 2016 – 2020
<b>Member:</b> Committee Portfolio	ETM, KU	2015 – 2016
<b>Student Advisor</b>	ETM, KU	2010 – 2015
<b>Member:</b> College Follow up and Activities	ETM, KU	2009 – 2013
<b>Member:</b> Research and Graduate Studies	ETM, KU	2009 – 2013
<b>Member:</b> Accreditation & Academic Assessment	ETM, KU	2009 – 2011, 2016–2017
<b>Member:</b> Laboratory and Instrumentation	ETM, KU	2010 – 2013
<b>Member:</b> College Plan & Departmental Activities	ETM, KU	2010 – 2013

**(b) College Level**

<b>Committees</b>	<b>College/University</b>	<b>From - To</b>
<b>Convener:</b> Annual Report	CLS, KU	Jan. 2022-Present
<b>Convener:</b> Mission	CLS, KU	Jan. 2022-Present
<b>Convener:</b> Scientific Affairs	CLS, KU	Jan. 2022-Present
<b>Convener:</b> Scholarship Committee	CLS, KU	Jan. 2023- Present
<b>Convener:</b> Curriculum	CLS, KU	Jan. 2022-Present
<b>Convener:</b> Research and Graduates Studies Committee and Awards	CLS, KU	Jan. 2022- Present
<b>Convener:</b> Preparing and following up the college plan	CLS, KU	Jan. 2022- Present
<b>Convener:</b> Mission of examining the quality of scientific and publishing papers	CLS, KU	Jan. 2022-Present
<b>Member:</b> College Promotion Committee	CLS, KU	2022-2023
<b>Member:</b> Student Affairs Committee	CLS, KU	2010-2012
<b>Member:</b> College Council	CLS	2015-2021
<b>Member:</b> Science Committee	ETM/KU	2016-2017
<b>Member:</b> Scholarship	ETM/KU	2016-2017
<b>Member:</b> Research & Higher Education	ETM/KU	2016-2017
<b>Member:</b> Preparation & follow up of College Plan	ETM/KU	2016-2017
<b>Member:</b> MSc Joint Program Committee	CLS	2017-2022

**(c) University Level**

<b>Convener:</b> Higher Committee for the University Awards for the distinguished researcher and best young researcher.	KU	2023-2024
<b>Convener:</b> Scientific Poster Day Event Committee	KU	2022-2023
<b>Member:</b> Research Committee	KU	2022-Present
<b>Member:</b> Scholarship Committee	KU	2022-Present
<b>Member:</b> Steering Committee for Central Lab.	National Unit for Env. Research and Serv. (NUERS)	2014 - Present
<b>Member:</b> MSc Joint Program Committee	KU	2017- 2022

### Thesis Supervision

MSC						
Supervisor						
No.	Title	Student Name	Start Date	Main Supervisor	Co-Supervisor/ Co-advisor/	Status
1	Plunging Liquid Jet Reactor Utilizing novel downcomers	Haya	November 2023	Fadel Azeez	Bader Al-Anzi	MSc-Ongoing
1	Plunging liquid jet reactor	Rawan Al-Qabandi	March, 2021	Bader Al-Anzi	Hanan Alsarawi, EPA, Kuwait	MSc-Ongoing
2	Plunging liquid jet reactors for dilution and aeration of brine discharged from seawater desalination plants	Islam Al-Shami	Sept. 2019	Bader Al-Anzi, KU	Eric Adams, MIT, USA	Completed August 2022
3	Monitoring of outfalls along Kuwait shoreline	Ahmad Al-Ghallaf	March, 2019	Bader Al-Anzi, KU	Meshaal, Private Sector, Kuwait.	MSc-Completed
4	Industrial wastewater treatment	Ali Saleh	March 2017	Bader Al-Anzi, KU	Abdullah, KISR	MSc - Completed Oct. 2022
5	CPLJR brine dispenser	Fahad Al Rabaie	March 2017- Oct. 2019	Bader Al-Anzi, KU	Eric Adams, MIT, USA	MSc-Completed
7	Assessment of industrial wastewater for Subhan district	Shaikha Aldwaisan	Oct. 2016-- May 2018	Bader Al-Anzi, KU	---	MSc – Completed

8	Techno-economic modeling of portable brine /seawater desalination system for various off-shore platforms (oil platforms).	Sumaya Al-Hammadi	Oct. 2016-April 2019	Bader Al-Anzi, KU	Jongyoon Han, MIT, USA	MSc-completed
<b>Convener</b>						
9	Simulation of Aquifer Storage Recovery Efficiency in Kabd, State of Kuwait using Modflow	Afnan Al-Huwaishel	Nov. 2016 - June 2019	Abdulrashid Elmi	<b>Convener:</b> Bader Al-Anzi	MSc-Completed
<b>Member</b>						
10	A Statistical Analysis to Drive NPI's for Kuwaiti Commercial and Mixed - Use Buildings	Yousef Al-Hashash	Feb. 2018-Oct. 2020	Adnan Al-Anzi	<b>Member:</b> Bader Al-Anzi	MSc-Completed
<b>PhD</b>						
<b>Supervisor/Advisor</b>						
11	Ph.D., Microfluidic engineering of water purification, MIT, Boston-USA	Siwon Chloe Choi	July 2013-May 2017	Jay Han, MIT, USA	<b>Co-advisor:</b> Bader Al-Anzi, KU	PhD-Completed
12	Ph D., "Removing of H <sub>2</sub> S from headwork in WWTP", University of Ain-Shams University, Cairo-Egypt.	Falah AlHajiri	Sept. 2008-Sept. 2011	Bader Al-Anzi, KU	---	PhD-Completed
<b>External Examiner</b>						
3	Development of Sustainable Membrane Distillation using Photoelectric-Responsive Membranes and Spacers for Desalination Applications	Noor Almarzooqi	2019-2023	Faisal Amarzooqi, Khalifa University, Chemical Eng., Abu Dhabi, UAE	Hassan Arafat, University, Chemical Eng., Abu Dhabi, UAE	PhD-Completed

### Consultation/ Delegation

Sl. No.	Firm	Details	Year
1	Kuwait Tiles Factory	To assess and evaluate the industrial wastewater effluent from the factory and to propose feasible and viable treatment process for reuse or safe discharge	Jul, 2008

2	South Korea	Part of KU delegation team visited Korea to discuss research collaboration issues in the domain of wastewater treatment and soil remediation	May, 2010
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### Research Fellow and Visiting Scientists Offers

Sl. No.	Institute	Details	Year
1	Texas A&M	Visiting scientist hosted by Department of Environmental & Occupational Health, Professor Virender Sharma, USA. The topic of research “Water & Wastewater Technologies: Desalination”	Sept. 2021
2	Massachusetts Institute of Technology (MIT), USA	Visiting scientist hosted by Department of Biological Engineering, Professor Jongyoon Han, USA. The topic of research “Desalination”	Sept. 2021
3	University of Alberta, Canada.	Visiting professor hosted by Department of Agriculture, Food and Nutritional Science, Dr. Amn Ullah, Canada. The topic of research “Isolation, Characterization and computational investigations of natural compounds as inhibitors against SRAS-CoV-2”	Sept. 2021
4	Massachusetts Institute of Technology (MIT), USA	Visiting scientist hosted by Department of Mechanical Engineering, Professor John H. Lienhard V., USA. The topic of research “Energy recovery from waste and utilizing PRO system.	Sept, 2013
5	Massachusetts Institute of Technology (MIT), USA	Post-Doc: Department of Mechanical Engineering, Professor John H. Lienhard V., USA. The topic of research “Thermal desalination of seawater and the focus of the work is humidification-dehumidification desalination”	Sept, 2009
6	University of Queensland, Australia	Post-Doc: Faculty of Engineering, Architecture & Information Technology, Professor Graham Schaffer, Australia. Advanced water Management Centre	Sept, 2009

### External Referee (Reviewer)/Member of Editorial Advisory Board

Sl. No.	
1	Member of editorial board for Kuwait Journal of Science
2	Member, editorial advisory board of African journal of engineering and environmental research.
3	Reviewer: Desalination, Elsevier.
4	Reviewer: International Journal of Water Resources and Environmental Engineering.
5	Reviewer: Environmental Monitoring and Assessment, Springer.
6	Reviewer: Water Research, Elsevier.
7	Reviewer: Water Science & Technology
8	Reviewer: Water and Environment Journal

### Judge/Session Chair/Organizer

Sl. No.	

1.	<b>Ssession chair</b> in the 39th International Conference on Climate and environmental changes and their impact on human and social security, 2022, Kuwait, KU, CLS.
2.	<b>KU representative</b> on the united nation day “Youth and Driving Ambition 4 climate Action”, 2022, Kuwait, KU.
3.	<b>Ssession chair</b> in the 39th International Conference on Climate and environmental changes and their impact on human and social security, 2022, Kuwait, KU, CLS.
4.	<b>Bader Al Anzi</b> , Next Generation Brine Desalination and Management for Efficiency, Reliability, and Sustainability, International Conference on Energy, Environment and Economics (ICEEE 2018) was held at Heriot-Watt University, Riccarton, Edinburgh, EH14 4AS, UK, 14- 16 August 2018. UK.
5.	<b>Bader Al Anzi</b> , session chair at “Energy recovery from wastewater streams utilizing Pressure Retarded Osmosis in the State of Kuwait” Invited Speaker at International conference on oil, gas and Petrochemistry, April 03-05, 2017 at Dubai, UAE.
6.	A member of the International Committee in Judging the Prestigious “Abdul Hameed Shoman Foundation (AHSF) Prize in Jordan, 26 June 2016.
7.	Organizing committee of 6th International Conference & Exhibition on Health, Safety and Environment, 12-14 February 2018 at Kuwait City, Kuwait.
8.	Judge for the International conference on Oil, Gas and Petrochemistry, Dubai, April 2017
9.	<b>Bader Al Anzi</b> , session chair in the First International Conference on Energy, Environment and Economics (ICEEE 2016), 2016, Edinburgh, UK
10.	<b>B. Al-Anzi</b> , session chair in the 3rd International Congress of Chemistry and Environment (ICCE07), 2007, Kuwait.

#### HONORS AND AWARDS.

Sl. No	Type, details and year of the awards and honors
1	CAI Award Invention & Innovation Golden Medal from <b>China Association of Invention &amp; Innovation</b> for invention entitled “Apparatus for measuring disenfranchisement rate of air” inventions during <b>the 14<sup>th</sup> International Invention Fair in the Middle East, Kuwait</b> , February 2024.
2	Golden Medal with juries appreciation for “Apparatus for measuring disenfranchisement rate of air” invention during <b>the 14<sup>th</sup> International Invention Fair in the Middle East, Kuwait</b> , February 2024.
3	Award and certificate for research excellence and achieving patent entitled “Effluent Dispenser System”, awarded by <b>Prof. Fahad Al-Rashidi</b> , Acting President of Kuwait University, May 2023.
4	Award and certificate for “Distinguished Researcher Award”, awarded by <b>Prof. Yousef Al-Roumi</b> , President of Kuwait University, November 2022.
5	Award and certificate for research excellence and achieving patent entitled “Zero pollution hybrid desalination and energy production system”, awarded by <b>Prof. Yousef Al-Roumi</b> , President of Kuwait University, October 2022.
6	Third place “Bronze Medal” award by the Patent Office at the Secretariat GCC, <b>Expo 2022, Dubai, UAE</b> . March 2022.
7	KU over all First-Place poster award for “Brine Management Utilizing High Current Densities ED-Crystallizer Hybrid system”, <b>Scientific poster Day, March 2021, Kuwait University</b> .

8	PhD program award by <b>Islamic Development Bank (IDB)</b> ; July 2020.
9	Award and certificate for research excellence and achieving patent entitled “Apparatus of Measuring Dis-Entrainment Rate of Air”, awarded by <b>Prof. Fayez Al-Dhefari</b> , Acting president of Kuwait University, October 2020.
10	Award and certificate for research excellence and achieving patent entitled “Method of Recycling Brine from a Multi-Stage Flash Desalination Plant”, awarded by <b>Prof. Hussain Al-Ansari</b> , President of Kuwait University, October 2019.
11	Finalist in the Study UK Alumni Award 2019, March 2019, UK
12	Award and certificate for research excellence and achieving patent entitled “Cooling System for Patients with Fever” patent awarded by <b>Prof. Hussain Al-Ansari, President of Kuwait University</b> , October 2018
13	Best poster award for “Application of Confined Plunging Liquid Jet Reactor (CPLJR) as an Aeration/Dispersion Technique for the Environmental Safe Discharge of Brine from Kuwait’s Desalination Plants”, <b>Scientific poster Day, 2017, Kuwait University</b>
14	Best poster award for “Application of PRO for assessing power generation from waste water treatment plant in the state of Kuwait" The 2nd Kuwait International Conference on Life Sciences (KICLS 2016).
15	Silver medal for “Portable Expanding Barrier for Muslim Worshippers” invention during the <b>9<sup>th</sup> International Invention Fair in the Middle East</b> hosted by the Kuwait Science Club, January 2017.
16	Silver medal for “Buoyant aerator with support legs” invention during the <b>9<sup>th</sup> International Invention Fair in the Middle East</b> hosted by the Kuwait Science Club, January 2017.
17	Award and certificate for research excellence and achieving patent entitled “Electrical Outlet Safety Device” patent awarded by <b>Prof. Hussain Al-Ansari, President of Kuwait University</b> , October 2015.
18	A check and certificate for research excellence and achieving patent entitled “Integrated Aeration” patent awarded by <b>Prof. Abdullatif AlBader, President of Kuwait University</b> , May 2014.
19	Patent’s Certificates for three new patents by <b>Mayor of Miami State, USA</b> March 2014.
20	Award from Kuwait’s <b>National Assembly Ali Al-Rashed</b> during ceremony honoring creative Kuwaitis. May 2013.
21	Award from <b>Kuwait-MIT Center for natural resources and the environment</b> . One-year stipend as a <b>full-time visiting scientist</b> hosted by Prof. John Lienhard a faculty member in mechanical engineering department at MIT. May 2013.
22	Plaque and a check for “Portable Aeration with Renewable Energy” invention during <b>The 5<sup>th</sup> International Invention Fair in the Middle East</b> hosted by the Kuwait Science Club, November 2012.
23	Golden Medal from <b>Association Russian House for International Scientific and Technological Cooperation</b> for inventions entitled “Portable Aeration with Renewable Energy and Integrated Aeration” inventions during <b>The 5<sup>th</sup> International Invention Fair in the Middle East</b> hosted by the Kuwait Science Club, November 2012.
24	Golden Medal with honor for “Portable Aeration with Renewable Energy” invention during <b>The 5<sup>th</sup> International Invention Fair in the Middle East</b> hosted by the Kuwait Science Club, November 2012.
25	Golden Medal for “Integrated Aeration” invention during <b>The 5<sup>th</sup> International Invention Fair in the Middle East</b> hosted by the Kuwait Science Club, November 2012.

26	Bronze Medal for “air Capsules” invention during <b>The 4<sup>th</sup> International Invention Fair in the Middle East</b> hosted by the Kuwait Science Club, November 2011.
27	A reward and certificate from <b>KFAS</b> for best capstone project in College for Women, Kuwait University, Spring semester 2011.
28	Pure Golden Medal for <b>Outstanding Student</b> awarded by <b>Sheikh Jaber Al-Sabah, His Highness the Amir of Kuwait</b> ; May 2002
29	Plaque of Excellence for <b>Outstanding Student</b> awarded by <b>Sheikh Sa’ad Al- Abdallah Al-Sabah, His Highness the Crown Prince of Kuwait</b> ; June 2002.
30	Plaque for <b>PhD Degree</b> awarded by <b>Sheikh Jaber Al- Mubarak Al-Sabah, Minister of Defense</b> ; June 2008.
31	Certificate of Excellence for <b>Outstanding, PhD, Student and Patent achieved in PhD study</b> awarded by <b>Dr. Naji Al-Mutairi, Director General of the Kuwait Institute for Scientific Research (KISR), Kuwait</b> ; April 2008.
32	Medal for participation in the Saudi Innovation Conference (SIC 2007) awarded by <b>Saudi Arabian Cultural Bureau in London Saudi Students Clubs in the UK and Ireland Term 26</b> ; May 2007.
33	Post-Doctoral Scholarship awarded by <b>Islamic Development Bank (IDB)</b> ; June 2008.
34	Plaque of participation in Saudi Innovation Conference (SIC 2008) awarded by <b>Saudi Arabian Cultural Bureau in London Saudi Students Clubs in the UK and Ireland</b> , June 2008.
35	Certificate of Academic Merit for Excellent Academic Achievement given by <b>Culture Attaché</b> of the State of Kuwait, U.S.A; 1993.
36	Certificate of Academic Merit for Outstanding Student awarded by <b>Ambassador of the State of Kuwait</b> ; U.S.A.; 1992.
37	Graduation Award for Outstanding Student awarded by <b>Ambassador of the State of Kuwait</b> , U.S.A; 1995.
38	Certificate for <b>Outstanding Contribution</b> made as the Country Representative of Kuwait awarded by the International Students Association (ISA), Loughborough Students’ Union; June 2005.

## 6- Teaching Activities

I have taught the following undergraduate and graduate level courses:

### **Undergraduate Courses**

<b>Institution</b>	<b>Course No.</b>	<b>Course Name</b>	<b>Type</b>
Kuwait University	ETM 1550495	Internship	Academic
Kuwait University	ETM 1550499	Capstone	Academic
Kuwait University	ETM 1550422	Waste Management & Practices	Academic
Kuwait University	ETM 1550320	Unit Treatment Technologies	Academic
Kuwait University	ETM 1550321	Water Quality Control Technology	Academic
Kuwait University	CFW/CLS 1500108	Applied Calculus	Academic
Kuwait University	CFW/CLS1500101	Introduction to Environmental Science	Academic
Kuwait University	CFW/CLS1500120	Human and Their Environment	Academic
Kuwait University	CFW/CLS 1500105	Chemistry	Academic



Kuwait University	CFW/CLS 1500139	Introduction to Environmental Technology Management	Academic
Kuwait University	CLS 1500107	Algebra	Academic

#### Graduate courses

Organization	Course No.	Title	Year
Kuwait University	561	Industrial Wastewater Treatment	2014- 2020
University of Alberta, Canada	AFNS 510	Water/Wastewater Treatment/ Renewable Biomaterials	March 2022

#### Short Courses in other organizations

Organization	Title	Type
Ali Al-Salem Army base	Chemical War course	Academic
Joint Operation Oil Company	Industrial wastewater	Short course
Kuwait Inst. For Sc. Res. (KISR)	Wastewater	Training Course
Ministry of Electricity & Water	Desalination	Training Course

#### New courses:

Developed the following new courses:

- Undergraduate ETM/CLS Program:
  - o United Treatment Technologies (ETM-320).
  - o (ETM-422).
  - o Introduction to Environmental Science (CLS-101).
- Graduate MSc Joint Program:
  - o Industrial Wastewater Treatment (561).

Revised and improved the following ETM/CLS courses:

- o Chemistry (105), calculus (108), algebra (107), introduction to environmental technologies (139), human and their environment, Water quality (321), Human & Their Environment (102).

#### Membership of Professional Societies

Sl. No.		Year
1	Member of ACS (American Chemical Society)	2021-Present
1	Member of Water Environment Federation (WEF)	2015-present
2	Member of Kuwait Society of Engineers.	1995 – present
3	Member of the committee discussed education status in Kuwait with MP.	2009
4	Chair of Student's Society, Loughborough University, UK.	2005 – 2007
5	Representative of Kuwait Students at Loughborough University, UK.	2005 – 2007

Signature

Prof. Bader Al-Anzi, PhD in Chemical Engineering

Acting Vice Dean for Academic affairs, Research and  
Graduate Studies, College of Life Sciences, KU