WALTER DEN

Department of Natural Sciences | Texas A&M University-San Antonio

Education

Doctor of Philosophy in Environmental Engineering (2001)

Department of Civil & Environmental Engineering, University of Southern California
Los Angeles, California

Master of Science in Civil Engineering (1995)

Department of Civil & Environmental Engineering, University of Southern California
Los Angeles, California

Bachelor of Science in Mechanical Engineering (1993)

Department of Mechanical Engineering, University of California at Santa Barbara
San Barbara, California

Academic Employment History

Texas A&M University-San Antonio, San Antonio, Texas

- ***Director, Institute for Water Resources Science and Technology*** | *February 2022 – present*

  Funding acquisition, research and development, capacity building, and network with local and regional stakeholders in water resources management.

- ***Professor and Founding Program Coordinator, Water Resources Science and Technology program*** | *August 2018-present*

  Design, implement curriculum and launched three degree-conferring programs (M.S. and B.S. in 2019; B.A.A.S. in 2020). Coordinating all aspects of the program, including student and faculty recruitment, program and faculty assessment, cultivation of teaching and research laboratories, advising students, formulating faculty promotion & tenure guideline.

Tunghai University, Taichung, Taiwan

- ***Dean, International College*** | *February 2016 – July 2018*

  Appointed as the inaugural full-time deanship for the newly launched college whose mission is to develop curricula for internationalized education and foster campus diversity. Responsible for launching the Global Leadership program and a second academic program in Sustainability Science and Management.

- ***Visiting Professor, Department of Environmental & Occupational Health****, Texas A&M University, College Station, TX | January 2017 – July 2017*

- ***Dean, Office of Research and Development*** | *February 2015 – January 2016*

  An executive position overseeing funding allocation to the university's academic units, sponsored research programs, research centers, institutional research capacity, faculty awards, and program assessment.

- ***Director, Center of Industry Collaboration and Incubation*** | *February 2014 – January 2016*
- ***Department Chair, Department of Environmental Science and Engineering*** | *August 2011 – July 2014*
- ***Director, Center for Precision Instruments*** | *August 2008 – July 2012*
- *Professor (August 2010), Associate Professor (January 2006), Assistant Professor (August 2002), Department of Environmental Science and Engineering | August 2002 – July 2018*

National Nano Device Laboratories, Hsinchu, Taiwan

- ***Associate Researcher, Back-End-of-Line Module*** | *February 2021 – July 2002*

Honors & Awards

Texas A&M University-San Antonio, San Antonio, Texas

- 2024 Nominated by the College of Arts and Sciences to compete for the Regents Professorship of Texas A&M University System.
- 2023 Outstanding Faculty Award: Excellence in Service, College of Arts and Sciences
- 2023 Scholarly Excellence in securing grants and external funding in excess of one million dollars supporting research, community outreach and academic programming, the Provost Office.
- 2023 & 2024 Research Excellence Recognition, the Provost Office.
- 2023 Fellow of Texas Academic Leadership Academy (Cohort 5).
  TALA is the flagship program initiated by Texas Council of Chief Academic Officers dedicated to advancing higher education in Texas. TALA accepts fellows through institutional nomination.
- 2020 Faculty Excellence in Scholarly/Creative Arts Award, College of Arts and Sciences.
- Funded Competitive research and program capacity-building grants
  Federal grants (PI and co-PI role) from USDA (20237000338958), NSF (2247898; 2122655; 2031497) and non-federal grants from the City of San Antonio, Grand Challenge Canada, and Texas A&M University-San Antonio.

Tunghai University, Taichung, Taiwan

- 2010-2016 Recipient of Ministry of Science and Technology- subsidized Research Scholars Excellence Program.
- 2012-2014 Recipient of Excellent University Teaching Projects, Ministry of Education
- 2009-2011, 2013, 2015 Faculty Excellence in Industrial Collaboration Award.
- 2010 Engineering Faculty Outstanding Teaching Award.

University Service (past five years)

- The Faculty Senate | August 2024 - present
- Leadership Search Committees: Presidential search (2023), Dean of College of Arts and Science search (2020).

- Sponsoring and mentoring international visiting scholars (Hung-Hsiang Chen, National Chi Nan University, Taiwan, August 2024- July 2025; Michelle Urrea Vivas, Polytechnic University of Catalonia, Spain, October 2024- September 2025) and postdocs (Dr. Shray Saxena, 2019-2022; Dr. Sayantan Das, summer 2019; Dr. Mohsen Aghashahi, June-December 2021).
- Thesis Advisor for 11 thesis-tracked graduate students (M.S.) in the Water Resources program since 2020 (6 graduated, 5 active).
- The Council of Principal Investigators | 2023 - present
- Organizing Committee, Student Research Symposium | 2022 - present
- The Graduate Council | 2020 – present
- Faculty Promotion & Tenure Review Committees (annually)
- Faculty Evaluation Committee (annually)
- Curriculum Review Committee | 2019-2021

Professional Society Service (past five years)

- American Chemical Society (ACS)
  Member of Executive Committee for the Environmental Chemistry (ENVR) Division since 2019 in the capacity of chairing the Speaker Expense Committee and as an Assistant Treasurer since 2023.
- American Water Works Association (AWWA), South Texas Chapter
  Active member participating in surveys and regional network.
- UltraPure Micro (UPM)
  Served as a moderator for UltraPure Micro 2020 & 2021 conference.
- International Roadmap for Devices and Systems (IRDS)
  Member of the AMC (Airborne Molecular Contamination) Work group, 2018-2020.

Other National or International Professional Experience

- Ad hoc and standing Review Panelist for the National Science Foundation.
- External reviewer for faculty hiring and promotion evaluation at the national and international level.
- Editorial Board member for *Water-Energy Nexus*, a peer-reviewed journal published by ScienceDirect (2017-present).
- Co-Guest Editor for special issue "Agricultural Engineering Technologies and Applications," *Sustainability* (journal, with Drs. M. Sultan, Y. Zhao, and U. Sajjad) in 2022.
- Co-Guest Editor for "Innovative Materials for Removal of Environmental Pollutants and Recovery of Nutrients from Wastewater," *Frontiers in Environmental Science* (With Drs. M. Usman, M. Usman, A. Tolkou) in 2023.
- Ad-hoc reviewer for more than 30+ different peer-reviewed journals.
- Professional opinions:
  Recent samples include interview by New Scientist regarding conflicting energy consumption and GHGs reduction goals in growing intensity of semiconductor fab operations (https://www.newscientist.com/article/2345448-emissions-from-worlds-chip-manufacturing-hub-are-growing-each-year/); interview by the Department of Commerce CHIPS Program Office managing

implementation of the CHIPS for America program; Interviewed by KXAN News/NBC Austin regarding the 3-day boil water mandate issued by the City of Austin due to a water treatment operator's error (https://www.kxan.com/news/local/austin/austin-water-answers-questions-about-what-caused-recent-boil-water-notice/); interviewed by San Antonio Express News - Can sewage help predict coronavirus strains, outbreaks? Texas A&M-San Antonio researchers think so (https://www.expressnews.com/news/local/article/Sewage-COVID-strains-17007748.php)

Peer-Reviewed Publications (Since 2018)

Over 75 peer-reviewed journal and book chapter publications. See here for a full list.

1. Bayles, B., W. Den, X. Ma*, X. Ye. "Dietary Exposure to Foodborne Per- and Polyfluoroalkyl Substances and Micro/nanoplastics May Contribute to Rising Obesity in Marginalized Communities." *Nature Food* (in review).
2. Den, W.* and D.S. Smyth. "How Texas Might Lead the Nation in Addressing a Growing Water Workforce Problem." *Texas Water Journal* (in revision).
3. Saxena, S.*, W. Den, P. T. Imhoff. "A CFD-Based Regressional Model for Estimating Moisture Transfer Across Laminate-Lined Sanitation Systems." *J Water Sanit Hyg Dev.* (In review)
4. Rosen*, R.A., G.M. Schindel, R. Green, W. Den (2024). "Best Management Practices to Mitigate Inadvertent Transport of Contaminants to Karstic Aquifers in Runoff During Emergency Fire Control," *Texas Water Journal* 15, 140-157.
5. McBrady, A.J., W. Den*(2024). "Targeting Macrophytes: Optimizing Vegetation Density to Enhance Water Quality within Constructed Wetlands," *Water* 16, 2278.
6. Walla, T.J., W. Den* (2024). "Assessment of Forced Evaporation as a Solution for Onsite Produced Water Management," Pre-print in ESS Open Archive (June 17, 2024) DOI: 10.22541/essoar.171865294.43824072/v1
7. Thimons, S.X., S. Saxena, W. Den* (2022b). "Ferrate-Pretreated Directional Solvent Extraction for Hydraulic Fracturing Produced Water: Technical and Economic Feasibility Studies," *J Water Process Eng* 49, 103053.
8. Abongwa,* P.T., W. Den, A. Teague (2022). "Dual Isotopic (O & N) Approach in the Assessment of NO_3^- Pollution in an Urban River," *Water Air Soil Pollut* 233, 280.
9. Abongwa,* P.T., W. Den, A. Teague (2022). "Chemical and Carbon Isotopic Characterization of a Karst-Dominated Watershed: Case of the Upper San Antonio River," *Arch Env Contam Toxicol* 82, 439–454.
10. Bilal, M., M. Sultan*, T. Morosuk, W. Den, U. Sajjad, M.M.A. Aslam (2022). Adsorption Based Atmospheric Water Harvesting: Materials and Systems. *Int Commun Heat Mass Transf* 133, 105961.
11. Saxena, S., W. Den* (2022). "In-situ Treatment Technologies for Pit Latrines for Mitigation of Groundwater Contamination by Fecal Pathogens – A Review of Recent Technical Advances," *J Water Sanit Hyg Dev* 12, 102–115.
12. Aslam, M.M.A., W. Den*, H.W. Kuo (2022a). "Elucidating the Mass Transfer Mechanism of Cr^{6+} Adsorption by Encapsulated Chitosan-Carbon Nanotubes-Iron Beads in Packed-Bed Columns," *J Water Process Eng* 46, 102586.
13. Aslam, M.M.A., H.-W. Kuo, W. Den*, M. Sultan*, K. Rasoold, M. Bilal (2022). "Recent Trends of Carbon Nanotubes and Chitosan Composites for Hexavalent Chromium Removal from Aqueous Samples", In: (Ed) Sut Ahuja, Separations of Water Pollutants with Nanotechnology - Separation Science and Technology series. Chapter 10, pp. 179-210. Elsevier: the Netherlands.
14. Aslam, M.M.A., H.W. Kuo, W. Den*, M. Usman, M. Sultan*, H. Ashraf (2021). "Functionalized Carbon Nanotubes (CNTs) for Water and Wastewater Treatment: Preparation to Application," *Sustainability* 13, 5717.
15. Aslam, M.M.A., W. Den*, H.-W. Kuo (2021b). "Removal of Hexavalent Chromium by Encapsulated Chitosan-Modified Carbon Nanotubes: Fixed-Bed Column Study and Modelling," *J Water Process Eng* 42, 102143.
16. Abongwa, P.T. and W. Den (2021). "Evolution of a Deep Fluid in a Surficial Environment Using Stable Isotopes of Carbon and Sulfur: Case of the Transitional Section of the Edwards Aquifer," *Water Air Soil Pollut* 232, 213.

17. Aslam, A.M., W. Den*, H.-W. Kuo (2021a). "Encapsulated Chitosan-Modified Magnetic Carbon Nanotubes for Aqueous-Phase Cr(VI) Uptake," *J Water Process Eng* 40, 101793.
18. Den, W.*, S.-C. Hu, C. Garza, O.A. Zargar (2020). "Airborne Molecular Contamination: Recent Developments in the Understanding and Minimization for Advanced Semiconductor Device Manufacturing," *ECS J Solid State Sci Technol* 9, 064003.
19. Lee, M., Y.L. Lin, P.-T. Chiueh, W. Den (2020). "Environmental and Energy Assessment of Biomass Residues to Biochar as Fuel: A Brief Review with Recommendations for Future Bioenergy Systems," *J Clean Prod* 251, 119714.
20. Chen, B.-Y., H.-W. Kuo, V.K. Sharma, W. Den* (2019). "Chitosan Encapsulation of Ferrate^{VI} for Controlled Release to Water: Mechanistic Insights and Degradation of Organic Contaminant," *Sci Rep* 9, 18268.
21. Chuang, J., H.-L. Lien, A. Kokubo Roche, P.-H. Liao, W. Den* (2019). "Consolidated Climate Markets Mechanism Analysis – Case Studies of China, Japan, and Taiwan," *Sustainability* 11, 6478.
22. Yang, C.T., S.T. Chen, C.H. Chang, W. Den, C.-C. Wu (2019). "Implementation of an Environmental Quality and Harmful Gases Monitoring System in Cloud," *J Med Biol Eng* 39, 456-469.
23. Yang, C.T., S.T. Chen, C.H. Chang, W. Den, E. Kristiani (2019). "Implementation of an Intelligent Indoor Environmental Monitoring and Management System in Cloud," *Future Gener Comput Syst* 96, 731-749.
24. Kanchanatip, E., S. Tulaphol, W. Den*, N. Grisdanurak, H.-Y. Miao (2019). "Sensing and Adsorption Study of Gaseous Phase Chlorophenols on Functionalized Carbon Nanotube Membrane," *Env Progr Sustain Energy* 38, S315-S322.
25. Den, W.*, C.-H. Chen, Y.-C. Luo (2018). "Revisiting the Water-Use Efficiency Performance for Microelectronics Manufacturing Facilities: Using Taiwan's Science Parks as a Case Study," *Wat Energ Nex* 1, 116-133.
26. Lu, B.-H., M. Lee, S.-T. Chen, C.-H. Chen, J. Luo, W. Den* (2018). "Strategic Optimization of Water Reuse in Wafer Fabs via Multi-Constraint Linear Programming Technique," *Wat Energ Nex* 1, 86-96.
27. Chuang, J., H.-L. Lien, W. Den*, L. Iskandar, P.-H. Liao (2018). "The Relationship between Electricity Emission Factor and Renewable Energy Certificate: The Free Rider and Outsider Effects," *Sustain Environ Res* 28, 422-429.
28. Den, W.*, V.K. Sharma, M. Lee, G. Nadadur, R. Varma (2018). "Lignocellulosic Biomass Transformations via Greener Oxidative Pretreatment Processes: Access to Energy and Value-Added Chemicals," *Front Chem* 6, 141.

* indicates the corresponding author(s)

Other Publications or Patents

1. Yang, Y. H., Yu, M. C., Den, W. Carbon Capture and Storage System, New design patented in the Republic of China (M386111, effective from 08/2010 to 08/2030).
2. Hsiao, J., Yang, Y. H., Den, W. Horizontal Bioreactor, New design patented in the Republic of China (M378931, effective from 08/2010 to 08/2030) and People's Republic of China (CN201565255U, effective from 08/2010 to 08/2030).
3. Yang, Y. H., Yu, M. C., Jeng, J. M., Den, W., Lin, J. Automated Algae Culture Apparatus, New design patented in Republic of China (M373108B, effective from 02/2010~01/2029) and People's Republic of China (CN201541550U, effective from 08/2010~08/2030).
4. Huang, C. P. and Den, W. Equipment for Treating Wastewater. New invention patented in the Republic of China (I286998, Effective from 09/2007 to 08/2026).
5. Den, W., Pirbazari, M., Sze, M. An Apparatus and Method for UV Oxidation and Microbiological Decomposition of Organic Waste Air. New invention patented in the Republic of China (446572, effective from 07/2001 to 09/2019) and the United State of America (6,632,659 B1, effective from 10/2003 to 10/2018).
6. Den, W., Huang, C. P., Dai, B. T. An Apparatus and Method for Biological Adsorbing Filter to Treat Organic Waste Air. New invention patented in the Republic of China (409067, effective from 10/2000 to 08/2019).