

Curriculum Vitae

Walter Den, Ph.D.

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❖ ACADEMIC & PROFESSIONAL EXPERIENCE

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| 2022-present | Director, Institute for Water Resources Science and Technology, Texas A&M University-San Antonio |
| 2018-present | Professor and Program Coordinator, Water Resources Science and Technology program, Department of Mathematical, Physical, and Engineering Sciences (formerly the Department of Science and Mathematics), Texas A&M University-San Antonio |
| 2017.1-2017.7 | Visiting Professor, Department of Environmental & Occupational Health, School of Public Health, Texas A&M University, College Station, Texas |
| 2016-2018 | Dean, International College, Tunghai University, Taiwan |
| 2015-2016 | Director, Office of Research and Development, Tunghai University |
| 2014-2016 | Director, Center of Industry Collaboration and Incubation, Tunghai University |
| 2011--2014 | Department Chair, Department of Environmental Science and Engineering, Tunghai University |
| 2011-2013 | Consultant, Material and Chemical Research Laboratories; Energy and Environmental Research Laboratories, Industrial Technology Research Institute (ITRI), Taiwan |
| 2008-2012 | Director, Center for Precision Instruments, Tunghai University |
| 2002-2018 | Professor (2010), Associate Professor (2006), Assistant Professor (2002), Department of Environmental Science and Engineering, Tunghai University, Taiwan |
| 2001-2002 | Associate Researcher, Back--End--of--Line Module, National Nano Device Laboratories (NDL), Taiwan |

❖ EDUCATION

2000	Doctor of Philosophy: Environmental Engineering, Department of Civil Engineering, University of Southern California, Los Angeles, California
1995	Master of Science: Civil Engineering, Department of Civil Engineering, University of Southern California, Los Angeles, California
1993	Bachelor of Science: Mechanical Engineering, Department of Mechanical Engineering, University of California at Santa Barbara, California

❖ SCHOLARLY & TEACHING ACHIEVEMENTS

Notable recognitions and academic achievements at A&M-SA:

- Recipient of College of Arts and Sciences 2020 Faculty Excellence in Scholarly/Creative Arts Award.
- Best Presentation Award at the Ultrapure Micro (UPM 2020), AMC & Gases Track.
- Principal Investigator of the following grants/contracts
 - USDA-National Institute of Food And Agriculture: Water for Texas through Education and Research - A transdisciplinary undergraduate sustainability program (WaTER) (January 2023-December 2025). (Grant# 20237000338958). \$149,996
 - NSF S-STEM Research Hub (via Virginia Tech): Accelerating Job Readiness by Participation in Community-Focused Innovation - Mitigating an Eutrophic Lake and Building Climate Change Resiliency for the Underserved Southside of San Antonio, Texas. (January-December, 2023). \$15,000
 - USDA - Agricultural Research Service: Adaptation, Transfer and Adoption of New Technologies to Increase the Resilience and protect Vulnerable Water Supplies in agricultural areas of the Karst Edwards Aquifer Region of South Central Texas. (August 2021-June 2023) \$109,021.39
 - City of San Antonio (Proposition 1 project): Edwards Aquifer Water Quality Protection from Catastrophic and Low to Mid-Level Effects of Discharge of Hazardous and Polluting Materials From Contaminated Water Run-off During Emergency Response. (September 2019-July 2023). \$218,937.
 - NSF HSI Pilot Project: Broadening Research Experience for Diversity, Equity, and Inclusion (BREDEI) (September 2021- August 2023). (Grant#2122655). \$199,999
 - NSF S-STEM: Water Security for Texas: Creating Educational Pathways and Cultivating Leadership for the Water Work Force (March 2021- February 2026). (Grant#2031497). \$649,996
 - Humanitarian Grand Challenge “Reinventing Pit Latrines using Breathable Laminate Liners to Mitigate Groundwater Contamination” (September 2020- December 2022). (Grant #R-HGC-POC-2007-35575). CAD\$249,980.
- Supervised three post-doctoral fellows:
 - Dr. Shray Saxena (2019-2022, now faculty at Bucknell University)
 - Dr. Sayantan Das (summer 2019, now faculty at TAMU-San Antonio)
 - Dr. Mohsen Aghashahi (June-December, 2021, now Postdoctoral Research Engineer at Texas A&M Institute of Data Science)

Notable recognitions and academic achievements at Tunghai University include:

- Recipient of Ministry of Science and Technology- subsidized Research Scholars Excellence Program, Taiwan, 2010-2016.
- Recipient of Excellent University Teaching Projects, Ministry of Education, Taiwan, 2012-2014.
- Faculty Excellence in Industrial Collaboration Award, Tunghai University, 2009-2011, 2013, 2015.
- Engineering Faculty Outstanding Teaching Award, Tunghai University, 2010.
- 22 research projects (as PI or co-PI) awarded by the Ministry of Science and Technology between 2002-2018.
- 20 hired projects (as PI) from government offices and industries totaling over >\$500,000 between 2003-2018.
- Served as the academic advisor or co-advisor for five doctoral students (Yuhao Kang, 2006; Changchi Chen, 2008; Jules Chuang, 2018; Chi-Hao Chen, 2018; Mian Ahson Muhammad Islam, projected 2022) and 39 graduate students, all graduated with a M.S. thesis.
- Supervised three post-doctoral research fellows:
 - Dr. Sartrawut Tulaphol, 2018 (now a faculty at the Department of Chemistry, King Mongkut's University of Technology Thonburi, Thailand)
 - Dr. Mengshan Lee, 2012-2016 (now a faculty at the Department of Safety, Health and Environmental Engineering, National Kaohsiung University of Science and Technology, Taiwan)
 - Dr. Pei-Yu Kuo, 2009-2011

❖ INSTITUTIONAL SERVICES AT TEXAS A&M UNIVERSITY-SAN ANTONIO

- Program Coordinator of Water Resources Science and Technology (WATR)
 - Coordinating all aspect of the new WATR program offering two bachelor's degrees (Bachelor of Science, Bachelor of Applied Arts and Science) and a master's degree (Master of Science), including curriculum design and implementations, student and faculty recruitment, cultivation of teaching and research laboratories, advising students, formulating faculty promotion & tenure guideline, setting up program advisory panel, among other administrative responsibilities.
- University/College/Department/Program Committees and Activities
 - Serving on various Dean/Faculty/Staff Search Committees, notably:
 - CoAS Tenure & Promotion Committee (2021-)
 - Graduate Council (2020-)
 - Graduate Faculty (2019-)
 - Faculty Evaluation Committee (CoAS, 2021-23; MPES, 2020-22 as Chair)
 - Curriculum Review Committees (College and University committee, 2019-21; Chair CoAS Committee, 2020-21)
 - Scholarship Committee (2020-)
 - International Education Committee (2020-)
 - A variety of ad hoc committees such as administrator, faculty, and staff search committees.
 - Organizing individual competition events for the Texas Regional Science Olympiad hosted by the Department of Science and Mathematics.
- Student Mentoring
 - Thesis Advisor for four thesis-tracked graduate students (M.S.).
 - Undergraduate research (co-advisor) for five undergraduate students.

❖ PROFESSIONAL SERVICES

- NSF review panelist (2022)
- 2022 Guest Associate Editor (with Muhammad Usman; Muhammad Usman; Athanasia Tolkou) in Water and Wastewater Management, *Frontiers in Environmental Science* (IF: 5.411), Research Topic: Innovative Materials for Removal of Environmental Pollutants and Recovery of Nutrients from Wastewater (2022-2023)
- Guest co-Editor (with Muhammad Sultan, Yuguang Zhao, and Uzair Sajjad), Special Issue “Agricultural Engineering Technologies and Applications” (2021-22) in ***Sustainability*** journal (IF 3.251).
- Served as a program moderator for UltraPure Micro 2021 conference (November 4-5, virtual conference)
- Member of the AMC (Airborne Molecular Contamination) Work-group, International Roadmap for Devices and Systems (IRDS) (2018-present).
- Editorial Board member, ***Water-Energy Nexus***, a peer-reviewed journal published by ScienceDirect (2017-)
- Advisory board member, the International Environmental Conference since 2013 (hosted by Southern California Chinese-American Environmental Protection Association), the Mainland-Taiwan Environmental Protection Conference since 2015, and the Sustainable Innovation in 2016 (hosted by the Center for Sustainable Design, U.K.)
- Invited judge for the Annual Innovation Expo in 2016 (hosted by the Stevens Institute of Technology, N.J.).
- Ad-hoc reviewer for more than 30+ different peer-reviewed journals. Accept peer reviewing responsibility for about 20--30 manuscripts every year in the past five years. Examples of the journals for which invited reviews of research manuscripts were accepted and performed in the past two years:
 - *Journal of Cleaner Production, Blue Green Systems, Journal of Water Reuse Desalination, International Journal of Environmental Science and Technology, Bioresource Technology, International Journal of Energy and Water Resources, Separation and Purification Technology, Water Science and Technology, Science of the Total Environment, Scientific Report, Molecules, Sustainable Environment Research, Climate.*
- Supervising panel for environmental protection of the Central Taiwan Science Park (CTSP), 2012~2015.
- Conducted more than 35 invited lectures (seminars, workshops, training programs) for universities, high schools, private companies, and central/local bureaus.
- Served as Accreditation Examiner for the Institute of Engineering Education Taiwan (IEET), 2016-2018.

❖ PROFESSIONAL AFFILIATIONS

- Active member of American Chemical Society (ACS)
Contributing member in the Division of Environmental Chemistry (ENVR). Also a member of the Executive Committee for the Division since 2019 in the capacity of directing the Speaker Expense Committee and has been appointed as Treasurer in the 2022 cycle (usually two-year terms).

- Active member of American Water Works Association (AWWA)
- Active member of Chinese Institute of Environmental Engineering (CIEnvE)
- Past member of Air and Waste Management Association (AWMA) and Institute of Environmental Science and Technology (IEST)

❖ COURSES TAUGHT

Undergraduate Level

- WATR 4310 Desalination and Emerging Technologies (3 credit hours, stacked with graduate-level course 5335, Fall 2019)
Principles and applications of membrane desalination technology (reverse and forward osmosis), thermal desalination processes, electro-dialysis and electro-capacitive deionization technology; concept of zero-liquid-discharge process.
- WATR 4315 Advanced wastewater treatment and recycling systems (3 credit hours, stacked with graduate-level course 5315, Fall 2019)
Principles and design criteria of primary (physical screen and sedimentation), secondary (suspended and attached-film biological processes), and tertiary (disinfection) wastewater treatment processes; regulation and policy for water reclamation and reuse; additional processes needed for water reclamation.
- Engineering mathematics (3 + 3 credit hours, 2002-2018)
Ordinary differential equations, partial differential equations, Laplace transform, Fourier series and transform, Euler's method, Runge-Kutta method, finite difference methods for both ordinary and partial differential equations.
- Fluid mechanics (3 credit hours, Fall 2002-2009)
Fluid statics, hydraulics, Navier-Stokes equation, internal flow, headloss, pump performance, external flow, flow about an immersed body, flow measurement.
- Trends in global ecology and environmental change (2 credit hours, 2016, 2017)
Practicing techniques and ability to research and communicate on critical environmental issues in both global and local scales; understanding international and national policies on energy, water, and resources through devising "board games" based on the policy and market frameworks; critically review of an existing CSR report, and make tangible recommendation based on scenario data.
- Scientific computation (2 credit hours, Spring 2004-2009)
Problem-based learning for students from diverse fields. Computation process included setting up differential equations with pertinent initial and boundary conditions, followed by building a numerical method to solve the problem. Solution methods and results were discussed throughout the course.

Graduate Level

- WATR 5335 & WATR 5315 (please see Undergraduate-Level WATR 4310 & WATR 4315)
- WATR 5360 Water Resource Sustainable Use and Conservation Policy and Practices
Examination of the existing practices of water conservation goals and techniques for several key water-consuming sectors, including industrial, agriculture, and commercial sectors. The course will also practice how to make water conservation strategies at corporate level and integrate water conservation as part of a circular economy. The course consists of five modules basing on separate but interlinking topics, namely: 1. water management plan for the state of Texas. 2. corporate social responsibilities and water conservation goals. 3. water consumptions in common industrial cooling and heating facilities and the water conservation opportunities. 4. characteristics of selected industries and their water consumption pattern and water conservation goals and methods. 5. irrigation practices and the existing and potential water-saving techniques.
- Advanced air pollution control design (3 credit units, Fall 2003-2018 odd years)

Unit design of particulate-removing devices (cyclone, electrostatic precipitator, baghouse) and vapor-removing devices (adsorption, scrubbing, thermal and catalytic oxidation), emission inventory and risk assessment of air pollution emission, engineering costs.

- Environmental system simulation (3 credit hours, Spring 2003-2018 even years)
Application of numerical solver (FlexPDE) and commercial computational fluid dynamics software (COMSOL) to design projects for environmental applications.
- Sustainable resource management (3 credit hours, Spring 2015)
Corporate social responsibility, guidelines of sustainability reporting, waste-to-resource valuation, life cycle assessment (carbon footprint, water footprint), introduction to energy, water, and waste policies, software application and project presentation.
- Environmental Physicochemical Treatment Processes (2 credit hours, co-instructors, Fall 2011-2018)
Introduction to membrane filtration and desalination technologies, reactor types and kinetics.

❖ RESEARCH EXPERTISE AND INTERESTS

- Water and wastewater purification and recovery
Electro-physical and electro-chemical processes
Membrane separation and fouling control
Bioactive adsorption and degradation
Microalgae cultivation and applications
Nanoparticle synthesis for aqueous-phase adsorption and oxidation
High-valence oxo-iron synthesis and applications
- Industrial practices for sustainable resource management
Industrial water management
Carbon asset management based on material and energy network optimization.
Life cycle assessment for process and product flow design
- Air pollution control
Carbon nanomaterials for solid-phase extraction and organic contaminants sensing applications
Nano-sized semiconductor catalysts for waste air treatment
Microalgae for carbon capturing
Airborne molecular contamination analysis and control

❖ LIST OF PUBLICATIONS

Peer-Review Journals (listed in reverse chronological order):

Publications as a faculty member of Texas A&M University-San Antonio (2018.8-present)

1. Thimons, S.X., S. Saxena, W. Den (2022). “Ferrate-Pretreated Directional Solvent Extraction for Hydraulic Fracturing Produced Water: Technical and Economic Feasibility Studies,” *Journal of Water Processing Engineering* 49, 103053.
2. Abongwa, P.T., W. Den, A. Teague (2022). “Dual Isotopic (O & N) Approach in the Assessment of NO₃⁻ Pollution in an Urban River,” *Water, Air, and Soil Pollution Water Air Soil Pollut* 233:280.
3. 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,” *Archives of Environmental Contamination and Toxicology* 82, 439–454.
4. Bilal, M., M. Sultan, T. Morosuk, W. Den, U. Sajjad, M.M.A. Aslam (2022). Adsorption Based Atmospheric Water Harvesting: Materials and Systems. *International Communications on Heat & Mass Transfer* 133, article 105961.
5. 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,” *Journal of Water, Sanitation and Hygiene for Development* 12, 102–115.
6. Aslam, M.M.A., W. Den, H.W. Kuo (2022). “Elucidating the Mass Transfer Mechanism of Cr⁶⁺ Adsorption by Encapsulated Chitosan-Carbon Nanotubes-Iron Beads in Packed-Bed Columns,” *Journal of Water Processing Engineering* 46, 102586.
7. 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.
8. Aslam, M.M.A., W. Den, H.-W. Kuo (2021). “Removal of Hexavalent Chromium by Encapsulated Chitosan-Modified Carbon Nanotubes: Fixed-Bed Column Study and Modelling,” *Journal of Water Processing Engineering* 42: 102143.
9. 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, and Soil Pollution* 232: 213.
10. Aslam, A.M., W. Den, H.-W. Kuo (2021). “Encapsulated Chitosan-Modified Magnetic Carbon Nanotubes for Aqueous-Phase Cr(VI) Uptake,” *Journal of Water Processing Engineering* 40: 101793.
11. 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 Journal of Solid State Science and Technology* 9(6): 064003.
12. 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,” *Journal of Cleaner Production* 251: 119714.
13. 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,” *Scientific Reports* 9:18268.
14. 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(22): 6478.

15. 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," *Water-Energy Nexus*, 1(2): 116-133.
16. 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," *Water-Energy Nexus*, 1(1): 86-96.

In Review/Revision

17. Smyth, D.S., S. Saxena, S. Thornhill, M. Metz, D. Guerra, C. Maldonado, W. Den. "Robotics, Automation and the Future of Microbial Source Tracking in the Era of Pandemics," *Frontiers in Microbiology* (in review).
18. Saxena, S., Imhoff, P.T., Den, W. "Estimating Moisture Transfer Rate in the Drying of Fecal Sludge in Breathable Membrane Laminated Latrines," *Journal of Water, Sanitation and Hygiene for Development* (in review).

Publications as a faculty member of Tunghai University (2002.8-2019.7)

19. 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," *Journal of Medical and Biological Engineering* 39(4): 456-469.
20. 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 Generation Computer Systems* 96: 731-749.
21. 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," *Environmental Progress & Sustainable Energy* 38(1): S315-S322.
22. 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," *Sustainable Environment Research* 28(6): 422-429.
23. 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," *Frontiers in Chemistry: Green and Environmental Chemistry* 6: 141.
24. Lee, M, A.A. Keller, P.-C. Chiang, W. Den, H. Wang, C.-H. Hou, J. Wu, X. Wang, J. Yan (2017). "Water-Energy Nexus for Urban Water Systems: A Comparative Review on Energy Intensity and Environmental Impacts in Relation to Global Water Risks," *Applied Energy* 205: 589-601.
25. Chen, C.-H., W. Den (2017). "The Value of Green Belts in Urban Sprawl: a Case Study of Taichung City, Taiwan," *International Journal of GEOMATE*, 12(33): 147-152.
26. Tu, T.-T., M. Lee, S.-T. Kuo, and W. Den (2016). "Citric Acid-Impregnated Activated Carbon Chemical Filtration for the Control of N-Methyl-2-Pyrrolidone in Air," *Indoor and Build Environment* 25: 772-785.
27. Tulaphol, S., S. Bunsan, E. Kanchanatip, N. Grisdanurak, H.-Y. Miao, W. Den (2016). "Influence of Chlorine Substituted on the Gaseous Adsorption of Chlorinated Phenolic Chemicals Using SiO₂ Particles Embedded Multiwall Carbon Nanotubes," *International Journal of Environmental Science and Technology* 13(6): 1465-1474.
28. Kanchanatip, E., B.-R. Su, S. Tulaphol, W. Den, N. Grisdanurak, C.-C. Kuo (2016). "Fouling Characterization and Control for Harvesting Microalgae *Arthrospira (Spirulina) maxima* Using a Submerged, Disc-Type Ultrafiltration Membrane," *Bioresource Technology* 209:23-30.
29. Lee, M. and W. Den (2016). "Life Cycle Value Analysis for Sustainability Evaluation of Bioenergy Products," *Journal of Cleaner Production* 113:541-547.
30. Ma, C.-Y., S.-C. Huang, P.-H. Chou, W. Den and C.-H. Hou (2016). "Application of Multiwalled

Carbon Nanotube–Chitosan Composite as Electrode to Electrosorption Process for Water Purification,” *Chemosphere* 146:113-120.

31. Lee, M., B.-Y. Chen, W. Den (2015). “Chitosan as a Natural Polymer for Heterogeneous Catalysts Support: A Short Review on Its Applications,” *Applied Sciences* 5:1272-1283. (doi:10.3390/app5041272)
32. Lee, H.-C., M. Lee, W. Den (2015). “Phenol Tolerance and Biodegradation by *Spirulina maxima*,” *Water, Air & Soil Pollution* 226, 395:1-11.
33. Hou, C.-H., S.-C. Huang, P.-H. Chou, W. Den (2015). “Removal of Bisphenol A from Aqueous Solutions by Electrochemical Polymerization on a Carbon Aerogel Electrode,” *Journal of Taiwan Institute of Chemical Engineers* 51:103–108.
34. Lin, W.-S., M.S. Lee, Y.-C. Huang, W. Den (2015) “Identifying Water Recycling Strategy Using Multivariate Statistical Analysis for High-Tech Industries in Taiwan,” *Resources, Conservation & Recycling* 94:35-42.
35. Su, Y.-N., W.-H. Lin, C.-H. Hou, and W. Den (2014) “Performance of Integrated Membrane Filtration and Electrodialysis Processes for Copper Recovery from Wafer Polishing Wastewater,” *Journal of Water Process Engineering* 4:149-158.
36. Chang, P., R. Yang, W. Den, C.F. Wu (2014) “Characterizing and Locating Air Pollution Sources in a Complex Industrial District Using Optical Remote Sensing Technology and Multivariate Statistical Modeling,” *Environmental Science and Pollution Research* 21:10852–10866.
37. Hou, C.-H., N.-L. Liu, H.-L. Hsu, and W. Den (2014). “Development of Multiwalled Carbon Nanotubes/Poly(vinyl Alcohol) Composite as Electrode for Capacitive Deionization,” *Separation and Purification Technology* 130: 7-14.
38. Yang, C. T., J.T. Liu, W. Den, C.-R. Liao, Y. C. Chou, J. J. Tsai (2014) “Application of an Intelligent Indoor Air Quality Monitoring System in a Medical Center,” *Journal of Medical Systems* 38(2), art. 15.
39. Lin, L.-K. Lin, W. Den, Y.-C. Chou, H.-Y. Yen, C.-H., Lu (2014). “A study on Developing the Indicators of Energy Conservation and Carbon Reduction for the Business,” Proceedings of the 2014 IEEE IEEM, 1491-1495.
40. Cheng, W.-L., L.-W. Lai, W. Den, M.-T. Wu, C.-A. Hsueh, and P.-L. Lin (2014). “The Relationship between Typhoons’ Peripheral Circulation and Ground-Level Ozone Concentrations in Central Taiwan,” *Environmental Monitoring and Assessment*, 186(2):791-804.
41. Huang, P.-Y., Z.-Y. Shi, C.-H. Chen, W. Den, H.-M. Huang, J.-J. Tsai (2013). “Airborne and Surface-Bound Microbial Contamination in Two Intensive Care Units of a Medical Center in Central Taiwan,” *Aerosol and Air Quality Research*, 13(3):1060-1069.
42. Chang, W.-T., M. Lee, and W. Den (2013). “Simultaneous Carbon Capture, Biomass Production, and Dairy Wastewater Purification by *Spirulina maxima* Photobioreaction,” *Industrial and Engineering Chemistry*, 52(5):2046-2055.
43. Cheng, W.-L., L.-W. Lai, W. Den, S.-Y. Wang, P.-L. Lin, and C.-H. Pai (2012) “An Analytical Investigation of a Sequence of Unusual Springtime Ozone Episodes over Metropolitan Taichung in 2007,” *Meteorology and Atmospheric Physics*, 117(3-4):153-166.
44. Den, W. and C. C. Wang (2012). “Enhancement of Adsorptive Chemical Filters via Titania Photocatalysts to Remove Vapor-Phase Toluene and Isopropanol,” *Separation and Purification Technology*, 85(1): 101-111.
45. Shiue, A., W. Den, S.-C. Hu, C.-H. Lin, V. Hu, and S. I. Lin (2011). “Validation and Application of Adsorption Breakthrough Models for the Chemical Filters Used in Air Purification Systems,” *Building and Environment*, 46(2):468-477.
46. Den, W., C.-C. Wang and S. Yang (2010). “Preliminary Investigation of an Integrated Photobioreactor System for Microalgal CO₂ Fixation,” *Chemical Engineering Transactions*, 21,

193-198 (doi: 10.3303/CET1021033).

47. Shiue, A., D.-C. Tien, W. Den, S.-C. Hu, and C.-S. Hsu (2010). "Deposition and Electrostatic Removal of Gaseous Organic Contaminants on Substrate Surfaces," *Applied Surface Science*, 256(20): 6113-6116.
48. Liu, H.-C., W. Den, S.-F. Chan, K. T. Kin (2008). "Analysis of Trace Contamination of Phthalate Esters in Ultrapure Water Using a Modified Solid-Phase Extraction Procedure and Automated Thermal Desorption-Gas Chromatography/Mass Spectrometry," *Journal of Chromatography A*, 1188(2): 286-294.
49. Den, W and C. J. Wang (2008). "Removal of Silica from Brackish Water by Electrocoagulation Pretreatment to Prevent Fouling of Reverse Osmosis Membranes," *Separation and Purification Technology*, 59(3): 318-325.
50. Chen, C.C., H. L. Bai, S. M. Chang, C. L. Chang, and W. Den (2007), "Preparation of N-doped TiO₂ Photocatalyst by Atmospheric Pressure Plasma Process for VOCs Decomposition under UV and Visible Light Sources," *J. Nanoparticle Research*, 9(3): 365-375.
51. Den, W., V. Ravindran, and M. Pirbazari (2006). "Photooxidation and Biotrickling Filtration for Controlling Industrial Emissions of Trichloroethylene and Perchloroethylene," *Chemical Engineering Science*, 61(12): 7909-7923.
52. Den, W. and C. Huang (2006). "Electrocoagulation of Silica Nano-Particles in Wafer Polishing Wastewater by a Multi-Channel Flow Reactor: A Kinetic Study," *Journal of Environmental Engineering*, ASCE, 132(12): 1651-1658.
53. Den, W., H. C. Liu, S. F. Chan, K. T. Kin, and C. Huang (2006). "Adsorption of Phthalate Esters with Multiwalled Carbon Nanotubes and Its Applications," *Journal of Environmental Engineering and Management*, 16(4): 275-282.
54. Den, W., C. Huang and H.-C. Ke, (2006). "Mechanistic Study on the Continuous Flow Electrocoagulation of Silica Nanoparticles from Polishing Wastewater," *Industrial & Engineering Chemistry Research*, 45(10): 3644-3651.
55. Den, W. and C. Huang (2006). "Parameter Optimization and Design Aspects for Electrocoagulation of Silica Nano-Particles in Wafer Polishing Wastewater," *Water Science and Technology*, 53(6): 187-194.
56. Kang, Y., W. Den and H. L. Bai (2006). "Short Time Deposition Kinetics of Diethyl Phthalate and Dibutyl Phthalate on a Silicon Wafer Surface," *Industrial & Engineering Chemistry Research*, 45(4): 1331-1336.
57. Den, W., H. L. Bai, and Y. Kang (2006). "Organic Airborne Molecular Contamination in Semiconductor Fabrication Cleanrooms: A Review," *Journal of Electrochemical Society*, 153(2): G149-G159.
58. Kang, Y., W. Den, H. L. Bai, and F.-H. Ko (2005). "Surface Deposition of Diethyl Phthalate on SiO₂ and Si₃N₄ Wafers in Simulated Cleanroom Environment," *Journal of the IEST*, 48(1): 21-32.
59. Kang, Y., W. Den, H. L. Bai, and F.-H. Ko (2005). "Direct Quantitative Analysis of Phthalate Esters as Micro-Contaminants in Cleanroom Air and Wafer Surfaces by ATD/GC-MS," *Journal of Chromatography A*, 1070(1-2): 137-145.
60. Den, W.* and C. Huang (2005). "Electrocoagulation for the Removal of Silica Nano-Particles from Chemical-Mechanical-Planarization Wastewater," *Colloids & Surfaces A: Physicochemical Aspects*, 254(2): 81-89.
61. Den, W., C. Huang, and C.-H. Li (2004), "The Effects of Cross-Substrate Interaction on Biotrickling Filtration for the Control of VOC Emissions from Microelectronics Industry," *Chemosphere*, 57(7): 697-709.
62. Bai, H. L., C. C. Chen, C. S. Lin, W. Den, C. L. Chang (2004), "Monodisperse Nanoparticle Synthesis by an Atmospheric Pressure Plasma Process: An Example of Visible Light

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