CURRICULUM VITAE

Eva M. DEEMER, Ph.D
(eva.deemer@uth.tmc.edu)

PROFESSIONAL EXPERIENCE

Assistant Professor
The University of Texas Health Houston
School of Public Health 2024-Present
Department of Environmental & Occupational Health Sciences

Principal Scientist 2024 - Present
Hazen and Sawyer

Research Assistant Professor
Interim Technical Director, Center for Inland Desalination Systems
The University of Texas at El Paso 2023-2024
Department of Civil Engineering

EDUCATION & TRAINING

Postdoctoral Fellow
The University of Texas at El Paso – Center for Inland Desalination 2018 – 2023
Department of Civil Engineering
Mentors: Dr. Shane Walker

Postdoctoral Fellow
The University of Texas at El Paso – Materials Research and Technology Institution 2017 – 2020
Department of Chemistry (Interdisciplinary)
Mentors: Dr. Russell Chianelli

Doctor of Philosophy
The University of Texas at El Paso complete: May 2017
College of Engineering, Concentration: Materials Science and Engineering

Bachelor of Science
The University of Texas at El Paso complete: May 2008
Major: Chemistry, Minor: Physics

SCHOLARSHIP/CREATIVE ACHIEVEMENTS

Publications

1. **Eva M Deemer**, Pei Xu, Rafael Verduzco, William Shane Walker, Challenges and opportunities for electro-driven desalination processes in sustainable applications, *Current Opinion in Chemical Engineering*, Volume 42, (**2023**) 100972, [https://doi.org/10.1016/j.coche.2023.100972]
2. Makeswaran, N.; Orozco, C.; Battu, A.K.; **Deemer, E.**; Ramana, C.V. Structural, Optical and Mechanical Properties of Nanocrystalline Molybdenum Thin Films Deposited under Variable Substrate Temperature. *Materials* **2022**, *15*, 754. [https://doi.org/10.3390/ma15030754]
3. Kuichang Zuo, Kunpeng Wang, Ryan M. DuChanois, Qiyi Fang, **Eva M. Deemer**, Xiaochuan Huang, Ruikun Xin, Ibrahim A. Said, Ze He, Yuren Feng, W. Shane Walker, Jun Lou, Menachem Elimelech, Xia Huang, Qilin Li, Selective membranes in water and wastewater treatment: Role of advanced materials, *Materials Today*, (**2021**) Volume 50, Pages 516-532, [https://doi.org/10.1016/j.mattod.2021.06.013]
4. CJ, Barnett, JE McCormack, **EM Deemer**, CR Evans, JE Evans, AO White, PR Dunstan, RR Chianelli, RJ Cobley, AR Barron. Enhancement of multiwall carbon nanotubes' electrical conductivity using metal nanoscale copper contacts and its implications for carbon nanotube-enhanced copper conductivity. *The Journal of Physical Chemistry C* (**2020**) 124 (34), 18777-18783 [https://doi.org/10.1021/acs.jpcc.0c05000]

5. J Ahlawat, R Neupane, **EM Deemer**, ST Sreenivasan, M Narayan. Chitosan-Ellagic Acid Nanohybrid for Mitigating Rotenone-induced Oxidative Stress. *ACS Applied Materials & Interfaces* (**2020**) 12 (16), 18964-18977 [https://doi.org/10.1021/acsami.9b21215]

6. N, Makeswaran, AK Battu, **EM Deemer**, CV Ramana. Crystal Growth and Structure-Property Optimization of Thermally Annealed Nanocrystalline Ga2O3 Films. *Crystal Growth & Design* (**2020**) 20 (5) 2893-2903 [https://doi.org/10.1021/acs.cgd.9b01130]

7. MA, Ahsan, **E Deemer**, O Fernandez-Delgado, H Wang, ML Curry, AA El-Gendy, JC Noveron. Fe nanoparticles encapsulated in MOF-derived carbon for the reduction of 4-nitrophenol and methyl orange in water. *Catalysis Communications* (**2019**) 130, 105753 [https://doi.org/10.1016/j.catcom.2019.105753]

8. MA Ahsan, O Fernandez-Delgado, **E Deemer**, H Wang, AA El-Gendy, ML Curry, JC Noveron. Carbonization of Co-BDC MOF results in magnetic C@ Co nanoparticles that catalyze the reduction of methyl orange and 4-nitrophenol in water. *Journal of Molecular Liquids* (**2019**) 290, 111059 [https://doi.org/10.1016/j.molliq.2019.111059]

9. **EM, Deemer**, T Capt, O Owoseni, T Akter, WS Walker. Hypochlorite Resistant Graphene Oxide Incorporated Ultrafiltration Membranes with High Sustainable Flux. *Industrial & Engineering Chemistry Research* (**2019**) 58 (27), 11964-11975 [https://doi.org/10.1021/acs.iecr.9b01685]

10. J Ahlawat, **EM Deemer**, M Narayan. Chitosan nanoparticles rescue rotenone-mediated cell death. *Materials* (**2019**) 12 (7), 1176 [https://doi.org/10.3390/ma12071176]

11. AK Battu, VB Zade, **E Deemer**, CV Ramana. Microstructure-Mechanical Property Correlation in Size Controlled Nanocrystalline Molybdenum Films. *Advanced Engineering Materials* (**2018**) 20 (10), 1800496 [https://doi.org/10.1002/adem.201800496]

12. **EM, Deemer**, RR Chianelli. Novel Applications with Asphaltene Electronic Structure. *Modified Asphalt* (**2018**) 3, 41-59 [http://dx.dio.org/10.5772/intechopen.78379]

13. **EM, Deemer**, PK Paul, FS Manciu, CE Botez, DR Hodges, Z Landis, T Akter, E Castro, RR Chianelli. Consequence of oxidation method on graphene oxide produced with different size graphite precursors *Materials Science and Engineering: B* (**2017**) 224, 150-157 [https://doi.org/10.1016/j.mseb.2017.07.018]

14. E Castro, A Cabrera-Espinoza, **E Deemer**, L Echegoyen. Low-Energy-Gap Organic Based Acceptor–Donor–Acceptor π-Conjugated Small Molecules for Bulk-Heterojunction Organic Solar Cells. *European Journal of Organic Chemistry* (**2015**) 21, 4629-4634 [https://doi.org/10.1002/ejoc.201500552]

Refereed Abstracts & Presentations at Professional Meetings

1. **Deemer, EM,** Barron, AR, & Chianelli, RR. **Fundamental Theory of Ultraconductive Copper**. Office of Naval Research ONR 331 Energy & Power Management Program Review on 4-6 December 2018. University of Tennessee, Knoxville Joint Institute for Advanced Materials, 2641 Osprey Vista Way, Room 147 Knoxville, TN 37996

2. **Deemer, EM,** Alvarado Jr., M**,** Akter, TA, Montana, M, Barnett, CJ, Barron, AR, & Chianelli, RR**. Ohmic Carbon Nanowires from Self Assembled Asphaltenes and Their Applications for Capping Cu Thin Films.** Office of Naval Research Sea Warfare & Weapons Department Advanced Naval Platforms Division Code 331 Advanced Electrical Conductor Workshop on 13-14 June 2018. ONR Headquarters, Arlington, VA 22203-1995 (Oral Presentation)

3. **Deemer, EM**, WY Lee. **Rapid Analysis of Glycerides in Biodiesel using flourescence.** *Division of Fuel Chemistry*, The 237th ACS National Meeting, Salt Lake City, UT, March 22-26, 2009. (Oral Presentation)

4. Adapting the 'Three Man' game scenario as a collaborative learning strategy in chemistry *Progressions: The Peer-Led Team Learning Project Newsletter*, Volume 9, Number 3, Spring 2008

5. **EM Deemer**, WY Lee, XC Kretschmer, RR Chianelli. **Simple analytical tool for characterizing biodiesel products.** *Advances in Analytical Characterization for Fuel Science*, The 235th ACS National Meeting, New Orleans, LA, April 6-10, 2008. (Oral Presentation)

6. **Determination of Polycyclic Aromatic Hydrocarbons (PAHs) in Particulate Matter (PM) using Stir-Bar Sorbtive Extraction Method (SBSE)** EPA Student Research Expo Ronald Reagan Center Washington D.C. Summer 2007 (Oral Presentation)

Other Creative Achievements

Deemer, EM, Alvarado M, Montana M, Chianelli RR. *METALLIC CARBON QUANTUM WIRE FROM SELF ASSEMBLED ASPHALTENE* **US20200091082A1** (Granted: 2020)
[https://patentimages.storage.googleapis.com/23/67/c2/0ab985881b5201/US20200091082A1.pdf]

Deemer, EM, Walker WS, Capt T. *COMPOSITION AND METHODS FOR IMPROVING THE ANTI-FOULING PROPERTIES OF POLYETHERSULFONE MEMBRANES* **US20170326505A1** (Granted: 2019) [https://patents.google.com/patent/US20170326505A1/en?inventor=Eva+Deemer]

Deemer, EM. Chianelli RR. *COMPOSITIONS AND METHODS RELATED TO DOPED GRAPHENE DERIVED FROM ASPHALTENES* **US 20160304350** (Granted: 2016) [https://patents.google.com/patent/US20160304350A1/en?inventor=Eva+Deemer]

Deemer, EM, Lee WY, Chianelli XC. *ANALYTICAL TECHNIQUE FOR MEASUREING BOUND GLYCERIDES IN BIODIESEL* COMPOSITION **US 8,476,075** (Granted: 2013) [https://patents.google.com/patent/US20160304350A1/en?inventor=Eva+Deemer]

Deemer, E.M., Hernandez, J.E. & Becvar, J.E. (2012). Adapting the 'Three Man' game scenario as a collaborative learning strategy in chemistry. Peer-Led Team Learning: Leader Training. [http://www.pltlis.org.]

Related Professional Training

Virginia Tech University – Polymer Chemistry: Principles and Practice December 5-10, 2010
Blacksburg, VA

Six-day course taught by five Virginia Tech professors and covers polymer synthesis, molecular weight determination, characterization of rheological and viscoelastic behavior; understanding of polymer structure and morphology, and mechanical testing; study elastomers, plastics, and fibers; practical examples from fields of adhesion and composites to understand the measurement of properties of polymers as functions of chemical composition, molecular weight, topology, morphology, etc.

Honors and Awards

- 2024 Received inaugural Hill Prize ($500,000) from the Texas Academies of Medicine, Engineering, Science and Technology (TAMEST) for Technology as joint research effort by Alma Energy and UTEP to extract lithium from geothermal waters. Project represents an interdisciplinary effort between College of Science (Benjamin Brunner, Ph.D., Jose Bañuelos, Ph.D, and Mark Engle, Ph.D.) and College of Engineering (Eva Deemer, Ph.D)
- 2019 Office of Research and Sponsored Projects, The University of Texas at El Paso, *Outstanding Efforts in Securing Extramural Funding*
- 2008 College of Science, The University of Texas at El Paso *Outstanding American Chemical Society-Student Affiliate*

Grants

UTEP Regents' Research Excellence Program, Proposal Title: *Proposal for the Creation of an Institute to Integrate Water Research at UTEP* Awarded: $5,495,375 **Role:** Co-Author with Dr. Ivonne Santiago, Dr. Camila Madeira, Dr. Lauren Kennedy (PI) (funded; start date TBD)

US Department of Energy; Laurence Berkley National Laboratory, Proposal Title: *Salt-free Electrodialysis metathesis (EDM) for high Recovery concentrate management* Awarded: $282,607 **Role:** Co-PI with Dr. Shane Walker (PI) (funded August 2022 - September 2026)

US Department of Energy, Proposal Title: *Copper Recovery from Mining Process Waters with Ion-Selective Electrodialysis*. Amount Awarded: $395,165 **Role:** Co-PI with Dr. Shane Walker (PI) and Joseph P Feuille (Co-PI) (funded August 2022 - September 2026)

US Bureau of Reclamation, Proposal Title: *All of the above and the kitchen sink: ZLD Desalination Direct Potable Reuse* Awarded: $399,699 **Role:** Co-PI with Dr. Shane Walker (PI) (funded August 2019 - September 2024)

US Department of Energy – Argonne National Laboratory
Computation Simulations of Nanocarbon Infused Metals (ie. Covetic) Amount awarded: $37,750 **Role:** PI (funded September 2018 - March 2019)

Texas Emerging Technology Fund El Paso Innovation and Commercialization (EPIC)– The University of Texas at El Paso and Texas Tech University Health Sciences Center El Paso
Doped Graphene and Device Applications from Petroleum Asphaltenes Amount Awarded: $50,000 **Role:** PI Project Grant (funded, January 2015 – July 2015)

TEACHING

Courses Taught at The University of Texas at El Paso **Fall 2018**

CHEM 1407: Introductory Chemistry (Section 12369)

- Undergraduate course in basic general chemistry for medical and health science based majors where students learn to demonstrated principles of molarity, molality, specific heat, equilibriums, acid and bases and wet laboratory preparation.

CHEM 2124: Laboratory for Organic Chemistry 2324 (Sections 12015, 12854, 13170, and 13171)

- Undergraduate course for basic organic chemistry operations including measuring melting point, infrared and NMR spectra, recrystallization, distillation, extraction, sublimation, and some basic reaction chemistry and related operations with the following objectives: Students learn to work safely in a laboratory environment; carry out multiple-step syntheses; apply organic synthetic laboratory techniques; characterization organic compounds by various methods; and to dispose of laboratory waste properly.

MENTORING

Center for Inland Desalination, UTEP **2022 – 2023**

- *Successfully carried out volunteer work as ERC student leadership council president*
- *Led meetings at NSF ERC Biannual meeting in Washington DC, Hosted and organized NSF site visit for ERC*
- *Invited to consult NEWT and manage a complex enterprise ERC with multiple academic institutions; industrial government and non-profit partners; collaborating organization; faculty, professional and classified staff; graduate and undergraduate students - across multiple time zones*

Materials Research and Technology Institute, UTEP **2012 – 2020**

- *Mentor M.S. and Ph.D. students*
- *Mentor undergraduate laboratory volunteers and teach them basic laboratory techniques and data collection procedures, maintaining EH&S certifications and yearly inspections*
- *Maintain organization of the laboratory equipment as well as troubleshoot equipment malfunctions*

Master's Thesis Committees

2022 Avianna Gallegos, College of Engineering, Civil Engineering (The University of Texas at El Paso)
Role: Co-Chair Status: Defended Successfully Dec 22
SULFONATED STYRENE GRAFTED SEBS/ABS MADE BY ADDITIVE MANUFACTURING FOR ION EXCHANGE APPLICATIONS

2021 Miriam Montana, College of Engineering, Biomedical Engineering (The University of Texas at El Paso)
Role: Committee Member Status: Defended Successfully Dec 21
CYTOCOMPATIBILITY OF GRAPHENE OXIDES ON HUMAN ERYTHROCYTES, SKINFIBROBLASTS, E. COLI, FRANCISELLA TULARENSIS, AND STAPYLOCOCCUS AUREUS

PROFESSIONAL SERVICE/ EXPERIENCE

Hazen and Sawyer

- **Principal Scientist** April 2024 – present
  Membrane Practice Group, Wastewater Practice group, Water Reuse Practice Group, Drinking Water Practice Group, AWWA membrane research committee member, Electro driven Separation Subject Matter Expert. Current areas of work include pilot-scale assessment of technologies for concentrate management, PFAS treatment, and destruction.

The Leaders for America Corp.

- **Board Member** Nov 2017 – present
  Non-Profit Organization supporting Peer-Led Team Learning (PLTL, www.pltl.org) - a highly effective program to enhance learning in STEM courses at the university level at more than 150 sites around the US. Undergraduate Peer Leaders (PLs) are trained in active, collaborative team-based pedagogical techniques. PLs become learning specialists enhancing the content knowledge base of elementary, middle and high school teachers in regions of participating PLTL programs.

Atlas Regeneration Technologies 2020 – present

- **Chief Technology Officer**
  CalTech RocketFund finalist (2023), Received the Water Tech Council International Prize (2022). Overseeing operations, product development, corporate management, scaling, and acquisition and aftermarket sales. Ion-exchange technology for sensing applications, device engineering, CAD, fabrication and production.

Advanced Technology Applications Group Inc. / Speedcell Technologies 2018 – present

- **Scientific Advisory Board Member**

Assists with SAM.gov and DSBS bidding, subcontract negotiation and management with prime federal defense contractors and national laboratories. Achieved the Quality Management System ISO 9001:2015 certification, assisting overseeing continuous auditing and preparation for AS9100. Metallurgical microstructural analysis for Additive manufacturing.

1st Graphene 2018

- **Chief Scientific Officer**
  Nanotechnology consultation, development of applications for commercial companies, Development of novel functional coatings, composite reinforcements and concrete, Proposal development and financial projections for project management

American Water Recycling 2013 – 2016

- **Founder, CTO & Interim CEO**
  *Invented, advanced and patented a minimum viable product with performance superior to multi-national manufacturing competitor and created sublicensing incentive to leverage manufacturing as CTO. Successfully lead team winning **$100,000** investment prize from The University of Texas Board of Regents, Ranked top 10 semi-finalist in Global Venture Labs, Earned **$10,000** 1st prize Paso Del Norte Venture Competition, Received **$10,000** UT Transform grant for prototyping and placed as a semi-finalist in Global Verizon Wireless venture competition (top 1% in 1M). Collaborated with Board of Directors and Co-Founders to develop corporate structure, capitalization tables, negotiate company valuation with investors and advised C-Suite officers, Trademarking and Patent filing, prepared cash flow statements and P&L statements with CFO,*

Hunt Power 2011 – 2012

- **Consultant**
  Product research and development, Analytical oversight of University research group developing novel semi-conductors. Provided instrumental analysis and experimental protocol development.

Global Alternative Labs 2008 – 2011

- **Laboratory Manager**
  Analysis and specification of biofuels. Responsible for maintaining instrumentation and analytical oversight, developed database administration for production data, instrument calibration records, QAQC reports, certificates of analysis for customers using most recent American Society for Testing and Materials (ASTM) methods and procedures.

ASTM: D2.E 2008 – 2011

- **Committee Member**
  Reviewer, voted on standards and specifications for diesel productions and testing methods, participant in research reports and inter-laboratory studies for methodology reproducibility/repeatability testing.

Ad Hoc Reviewer:

- ACS Applied Nano Materials
- Environmental Science & Technology
- Industrial & Engineering Chemistry Research
- Inorganic Chemistry Communications

PROFESSIONAL REFERENCES

	Email	*Phone*
Post-doctoral mentors:		
Shane W. Walker, Ph.D, P.E.	Shane.Walker@ttu.edu	806-834-0823
Malynda. Cappelle, Ph.D	mcappelle@usbr.gov	575-443-6553
Post-doctoral Instructor mentors:		
James. Salvador, Ph.D	jsal@utep.edu	915-747-5704
Carl Dirk, Ph.D	cdirk@utep.edu	915-747-7560
Employer		
Kevin Alexander (Supervisor)	kalexander@hazenandsawyer.com	760-525-328
Ken Hall (Manager)	khall@hazenandsawyer.com	817-313-1576