Alan W. Weimer

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PROFESSIONAL EXPERIENCE

The University of Colorado (Boulder, CO)
- 2019-present: Melvin E. and Virginia M. Clark Professor
- 1996-2019: Professor, H.T. Sears Memorial Professor

The Dow Chemical Company (Midland, MI)
- 1980-1996: 5 promotions, including promotion to Associate Research Scientist (1995)

Licensed PE (State of Colorado, PE 0020279)

EDUCATION

Ph.D., Chemical Engineering, University of Colorado, 1980
M.S., Chemical Engineering, University of Colorado, 1978
B.S., Chemical Engineering (Summa cum Laude), University of Cincinnati, 1976

HONORS AND AWARDS

- 2018 National Academy of Inventors (NAI)
- 2017 AIChE Lifetime Achievement Award in Particle Technology
- 2016 Distinguished Alumni Award, Boardman High School (Youngstown, Ohio)
- 2015 AIChE Nanoscale Science and Engineering Forum (NSEF) Forum Award
- 2015 AIChE Research Excellence in Sustainable Engineering Award
- 2014 Department of Chemical Engineering Faculty Advising Award
- 2011 Excellence in Bio-Derived Technology Commercialization Award (CO Cleantech Industry Assoc.)
- 2010 AIChE Excellence in Process Development Research Award
- 2010 Dean's Award for Outstanding Research (College of Engineering and Applied Science)
- 2010 University of Colorado Physical Science Company of the Year Award – Sundrop Fuels
- 2009 AIChE Thomas Baron Award in Fluid-Particle Systems
- 2007 University of Colorado Physical Science Company of the Year Award – ALD NanoSolutions
- 2006 Distinguished Engineering Alumni Award (University of Colorado)
- 2006 Frost & Sullivan Excellence in Technology Award (via ALD NanoSolutions, Inc.)
- 2006 Inducted into University of Colorado "Pinnacles of Inventorship" Group
- 2006 AIChE Particle Technology Forum Service Award
- 2005 University of Colorado Boulder Faculty Assembly Excellence in Research, Scholarly and Creative Work Award
- 2005 University of Colorado College of Engineering and Applied Science Faculty Research Award
- 2005 United States Department of Energy Hydrogen Program R&D Award
- 2004 R & D 100 Award (Particle-ALD)
- 2004 University of Colorado (Boulder) Inventor of the Year Award
- 2004 AIChE Fellow
- 2002 Niwot, Colorado *Left Hand Laurel* Community Service Award
- 2000, 2001 Department of Chemical Engineering *Faculty Mentor* Award (by students)
- 1997 AIChE Particle Technology Forum *Fluidized Processes Recognition* Award
- 1995 Dow Chemical Company *Excellence in Science* Award
- 1994 Dow Chemical Company *Ceramics Technology Leadership* Special Recognition Award
- 1993 Dow Chemical Company Research *Inventor of the Year* Award
- 1993 Dow Chemical Company *Ceramics Milestone* Award
- 1993 Mid-Michigan AIChE *Professional Progress* Award

- 1991 *Distinguished Young Engineering Alumnus* (University of Cincinnati)
- 1990 Dow Chemical Company *Spangenberg Ceramics Founder's Award*
- 1976 University of Cincinnati *Herman Schneider Medal*

PUBLICATIONS & PATENTS

- 241 published or in-press Refereed Publications
- 46 U.S. Patents (issued); 8 U.S. Patents (pending)
- 165 Invited Presentations
- 7 Edited AIChE Symposium Proceedings; 1 Edited Text; 1 Guest Edited AIChE Journal Issue; 1 Guest Edited Powder Technology Issue; 3 Text Chapters

SYNERGISTIC ACTIVITIES (Technical Supervisory Role)

- Chair (2004-2006), Vice-Chair & Treasurer (2000-2003) AIChE Particle Technology Forum
- Global Project Coordinator (www.iphe.net) "Solar-driven High Temperature Thermal Splitting of Water"
- Associate Editor, Journal of Nanoparticle Research (2006 – 2021)
- Director, Materials Engineering and Sciences Division (MESD) of the AICHE 1997-1999
- Chair, National AIChE Area 8d (Ceramics) 1995-1996 and National AIChE Area 3b (Fluidization and Fluid-Particle Systems) 1990-1991
- Committee Chair, University of Colorado at Boulder Council on Research & Creative Work (2004/5)
- Co-founded ALD NanoSolutions, Inc. (www.ALDNanoSolutions.com) in 2001, that merged with Forge Nano in 2020 (www.ForgeNano.com) and Copernican Energy (co-founded in 2006, merged with Sundrop Fuels (www.SundropFuels.com) in 2008 - served as Chief Technical Officer for Sundrop Fuels from July, 2008 until the $155M investment by Chesapeake Energy for a 50% stake, July, 2011); Big Blue Technologies (www.BigBlueTec.com) spun out of lab in 2016.

Primary Research Contribution: 35 Ph.D.s graduated since 2003 – 100% placement, including 6 academics; 8 Ph.D.s currently being directed; 241 peer-reviewed research papers published (Web of Science h-index = 59 (9,543 citations); Google Scholar h-index = 73 (16,547 citations); (http://scholar.google.com/citations?user=KqGtMDIAAAAJ&hl=en&oi=ao); 46 U.S. Patents issued; 165 invited presentations; ALD NanoSolutions spun out from lab in 2001 (merged with Forge Nano, January, 2020; www.ForgeNano.com), 175th Fastest Growing Company in North America (Deloitte, 2022); Copernican Energy spun out of lab in 2006, acquired by Sundrop Fuels (www.SundropFuels.com) in 2008; Co-invention, development and commercialization of the Rapid Carbothermal Reduction Process (1986 – 1996) for the Dow Chemical Company, sold to Sandvik Coromant and commercialized in UK in 1999; >$35M PI contributions from 80+ funded research grants since 1996; 16 major research related awards/honors.

Alan W. Weimer
(Peer Reviewed Publications).

1) Bamidele, E.A., S.I. Jalali, A.W. Weimer, and R. Raj, "Flash sintering of tungsten at room temperature (without a furnace) in <1 min by injection of electrical currents at different rates" Journal of the American Ceramic Society, https://doi.org/10.1111/jace.19532; 107:817–829 (2024).
2) Nguyen, J.A., A.Becker, K.Kanhaiya, H. Heinz*, and A.W. Weimer, "Analyzing the Li-Al-O Interphase of Atomic Layer Deposited Al2O3 Films on Layered Oxide Cathodes Using Atomistic Simulations, ACS Applied Materials & Interfaces, https://doi.org/10.1021/acsami.3c15080 16 (1), 1861-1875 (2024).
3) Bamidele, E.A., A.W. Weimer, and R. Raj, "Flash sintering of rhenium at ambient temperature in < 1 minute with electrical current," Journal of Refractory and Hard Materials (2023).
4) Tran, J., K.J. Warren, D. Mejic, R.L. Anderson, L. Jones, D.S. Hauschulz, C. Wilson and A.W. Weimer, "Pressure-enhanced performance of metal oxides for thermochemical water and carbon dioxide splitting," Joule, 7, 1759-1768 https://doi.org/10.1016/j.joule.2023.07.016 (2023).
5) Koyama, Y., K. Ito, S. Ohta, M. Nakakura, T. Kodama, K.J. Warren, A.W. Weimer, and K. Matsubara, "Two-step carbon dioxide thermochemical splitting using foam device of ceria and hercynite," Journal of Japan Solar Energy Society, 49(3), 1-6, https://doi.org/10.24632/jses.49.3_1 (2023).
6) Hartig, J., V. Dahanayakeb, J. Nguyen, C. Wilson, A.M. Barnes, and A.W. Weimer, "A moving porous media model for continuous spatial particle ALD," Powder Technology, https://doi.org/10.1016/j.powtec.2023.118448 (2023).
7) Weimer, A.W., "From a Laboratory Curiosity to a Commercial Powder Processing Plant – A Personal Perspective," Powder Technology, https://doi.org/10.1016/j.powtec.2023.118279 , 418, March, 118279 (2023).
8) O'Toole, R.J., B. Yoon, S. Ghose, A.W. Weimer, C.B. Musgrave, and R. Raj, "In-Operando Synchrotron Experiments of Flash Sintering Carried out in Current Rate Mode," Journal of the American Ceramic Society, 2023;1–6, DOI: 10.1111/jace.19049 (2023),
9) Hartig, J., A. Shetty, D.R. Conklin, and A.W. Weimer, "Aeration and cohesive effects on flowability in a vibrating powder conveyor," Powder Technology, 408, August,117724, https://doi.org/10.1016/j.powtec.2022.117724 (2022).
10) Warren, K.J. and A.W. Weimer, "Solar Thermochemical Fuels: Present Status and Future Prospects," Solar Compass, https://doi.org/10.1016/j.solcom.2022.100010 (2022).
11) Zaccarine, S.F., S.M. Alia, W.W. McNeary, R.Chattot, M.J. Dzara, I. Martens, S.A. Mauger, A.W. Weimer, J. Drnec, B.S. Pivovar, and S. Pylypenko, "Optimization of Extended-Surface PtNi Nanowire Oxygen Reduction Electrocatalysts Produced via Atomic Layer Deposition," ACS Applied Energy Materials, https://doi.org/10.1021/acsaem.2c00016 (2022).
12) Bull, S.K., T. Champ, S. Raj, A.W. Weimer and C.B. Musgrave, "Ab initio screening of refractory nitrides and carbides for high temperature hydrogen permeation barriers," Journal of Nuclear Materials, 563, 153611 (2022).

13) O'Toole, R.J., C. Hill, P.J. Buur, C.J. Bartel, C.J. Gump, C.B. Musgrave, and A.W. Weimer, "Hydrolysis protection and sintering of aluminum nitride powders with yttria nanofilms," Journal of the American Ceramic Society, DOI:10.1111/jace.18310, (2022).
14) Warren, K.J., J.T. Tran, and A.W. Weimer, "A Thermochemical Study of Iron Aluminate-Based Materials: A Preferred Class for Isothermal Water Splitting," Energy & Environmental Science DOI: 10.1039/d1ee02679h, (2022).
15) Venkataraman, M. B., A. Rahbari, P.J. van Eyk, A.W. Weimer, W. Lipiński, and J.D. Pye (2021)' "Liquid fuel production via supercritical water gasification of algae: a role for solar heat integration?", Sustainable Energy & Fuels https://doi.org/10.1039/D1SE01615F.
16) Hartig, J., H.C. Howard, T.J. Stelmach, and A.W. Weimer, "Experimentally validated DEM modeling of cohesive powder in a continuous vibrating bed reactor," Powder Technology, 386, 209-220 (2021).
17) Lai, A., H. Loehde-Woolard, W.W. McNeary, J. Burger, R. Pfeffer, and A.W. Weimer, "Amine-functionalized Fumed Silica for CO_2 Capture through Particle Molecular Layer Deposition," Chemical Engineering Science, (https://doi.org/10.1016/j.ces.2021.116954) (2021).
18) Bull, S.K., T.A. Champ, S.V. Raj, R.C. O'Brien, C.B. Musgrave, and A.W. Weimer, "Atomic Layer Deposited Boron Nitride Nanoscale Films Act as High Temperature Hydrogen Barriers," Applied Surface Science, Article 150428 (https://doi.org/10.1016/j.apsusc.2021.150428) (2021).
19) Fisher, R.P., A. Lewandowski, T.W. Yacob, B.J. Ward, L.M. Hafford, R.B. Mahoney, C.J. Oversby, D. Mejic, D.H. Hauschulz , R.S. Summers, K.G. Linden, and A.W. Weimer, "Solar Thermal Processing to Disinfect Human Waste," Sustainability, 13, 4935 https://doi.org/10.3390/su13094935 (2021).
20) O'Toole, R.J. B. Yoon, C.J. Gump, R. Raj, and A.W. Weimer, "Flash sintering of yttria-stabilized zirconia powders coated with nanoscale films of alumina by atomic layer deposition," Journal of the American Ceramic Society (doi: 10.1111/jace.17684) (2021).
21) McNeary, W.W., A.E. Linico, and A.W. Weimer, "Water management implications for ALD modified polymer electrolyte membrane fuel cell catalysts," J of Nanoparticle Research, 22:185 https://doi.org/10.1007/s11051-020-04921-8 (2020).
22) Rowe, S.C., T.A. Ariko, K.M. Weiler, J.T.E. Spana, and A.W. Weimer, "Reversible Molten Catalytic Methane Cracking Applied to Commercial Solar-Thermal Receivers," Energies, 13, 6229 (2020). http://doi:10.3390/en13236229.
23) Millican, S.L., I. Androshchuk, J.T. Tran, R.M. Trottier, A. Bayon, Y. Al Salik, H. Idriss, C.B. Musgrave, and A.W. Weimer, "Oxidation Kinetics of Hercynite Spinels for Solar Thermochemical Fuel Production," Chemical Engineering Journal, Article 126015 (2020). https://doi.org/10.1016/j.cej.2020.126015 (2020).
24) Bull, S.K., W.W. McNeary, C. Adkins, T. Champ, C.A. Hill, R.C. O'Brien, C.B. Musgrave, and A. W. Weimer, "Atomic Layer Deposition of Tungsten, Nitride Films as Protective Barrier to Hydrogen," Applied Surface Science, 507, Article 145019 (2020) (https://doi.org/10.1016/j.apsusc.2019.145019).
25) O'Toole, R.J., P.J. Buur, C.J. Gump, C.B. Musgrave, and A.W. Weimer, "Solid-state sintering of core-shell ceramic powders fabricated by particle atomic layer deposition, J of the American Ceramic Society, 103:4101–4109. (2020) (http://dx.doi.org/10.1111/jace.17079).
26) Clary, J.M., S.A. Van Norman, H.H. Funke, D. Su, C.B. Musgrave, and A.W. Weimer, "Highly Dispersed Co Deposited on Al2O3 Particles via CoCp2+H2 ALD," Nanotechnology, 31 (17), Article 175703 (2020) doi.org/10.1088/1361-6528/ab68e1.
27) Al-Shankiti, I.A., A. Bayon, and A.W. Weimer, "Reduction Kinetics of Hercynite redox Materials for Solar Thermochemical Water Splitting," Chemical Engineering Journal, Article 124429 (2020). https://doi.org/10.1016/j.cej.2020.124429 (2020).
28) Chubukov, B.A., S.C. Rowe, A.W. Palumbo, M.A. Wallace, and A.W. Weimer, "Investigation of continuous carbothermal reduction of magnesia by magnesium vapor condensation onto a moving bed of solid particles," Powder Technology (doi.org/10.1016/j.powtec.2019.01.067), 365, 2-11 (2020).
29) Hamidi, M., V.M. Wheeler, X. Gao, J. Pye, K. Catchpole, and A.W. Weimer, "Reduction of iron–manganese oxide particles in a lab-scale packed-bed reactor for thermochemical energy storage," Chemical Engineering Science (2020), https//doi.org/10.1016/j.ces.2020.115700

30) Arifin, D., A. Ambrosini, S.A. Wilson, B. Manda, C.L. Muhich, and A.W. Weimer, "Investigation of Zr, Gd/Zr, and Pr/Zr – doped Ceria for the redox splitting of water," International Journal of Hydrogen Energy, (https://doi.org/10.1016/j.ijhydene.2019.10.177); 45, 160-174 (2020).
31) Hoskins, A.L., W.W. McNeary, S.L. Millican, T.A. Gossett, A. Lai, Y. Gao, X.H. Liang, C.B. Musgrave, and A. W. Weimer, "Non-uniform Growth of Sub-2 Nanometer Atomic Layer Deposited Alumina Films on Lithium Nickel Manganese Cobalt Oxide Cathode Battery Materials," ACS Applied Nano Materials, (https://pubs.acs.org/doi/abs/10.1021/acsanm.9b01490) (2019). 2 (11), 6989-6997 (2019).
32) Bartel, C.J., J. Rumptz, A.W. Weimer, A. Holder, and C.B. Musgrave, "High-throughput equilibrium analysis of active materials for solar thermochemical ammonia synthesis" ACS Applied Materials & Interfaces (2019); https://doi.org/10.1021/acsami.9b01242.
33) Hamidi, M, V.M. Wheeler, P. Kreider, K. Catchpole, and A.W. Weimer, "Effective thermal conductivity of a bed packed with granular iron–manganese oxide for thermochemical energy storage", Chemical Engineering Science, 207(2), 490-494 (2019).
34) McNeary, W.W., S.F. Zaccarine, A. Lai, A.E. Linico, S. Pylypenko, and A.W. Weimer, "Improved Durability and Activity of Pt/C Catalysts through Atomic Layer Deposition of Tungsten Nitride and Subsequent Thermal Treatment," Applied Catalysis B: Environmental, 254, 587-593 (2019).
35) Hoskins, A.L., S.L. Millican, C.E. Czernik, I Alshankiti, J.C. Netter, T.J. Wendelin, C.B. Musgrave, and A.W. Weimer, "Continuous on-sun solar thermochemical hydrogen production via an isothermal redox cycle," Applied Energy, 249, 368-376 (2019).
36) Weimer, A.W., "Particle Atomic Layer Deposition," Journal of Nanoparticle Research (2019) 21:9 https://doi.org/10.1007/s11051-018-4442-9
37) Hamidi, M, A.Bayon, V.M. Wheeler, P. Kreider, M.A. Wallace, T. Tsuzuki, K. Catchpole, and A.W. Weimer, "Reduction kinetics for large spherical 2:1 iron–manganese oxide redox materials for thermochemical energy storage, " Chemical Engineering Science, 201, 74-81 (2019).
38) Al-Shankiti, I.A., B.D. Ehrhart, B.J. Ward, A. Bayon, M.A. Wallace, R. Bader, P. Kreider, and A.W. Weimer, "Particle Design and Oxidation Kinetics of Manganese Oxide redox Materials for Thermochemical Energy Storage," Solar Energy, 183, 17-29 (2019).
39) Bartel, C.J., A.W. Weimer, S. Lany, C.B. Musgrave, and A. M. Holder, "The role of decomposition reactions in assessing first-principles predictions of solid stability," npj Computational Materials 5 (1), 4 (2019).
40) Hafford, L.M., B.J. Ward, A.W. Weimer, and K. Linden, "Fecal Sludge as a Fuel: Characterization, cofire limits, and evaluation of quality improvement measures, Water Science and Technology, 78 (12), 2437-2448 (2019).
41) Palumbo, A.W., C.J. Bartel, J.C. Sorli, and A.W. Weimer, "Characterization of products derived from the high-temperature flash pyrolysis of microalgae and rice hulls," Chemical Engineering Science, 196, 527-537 (2019).
42) Hoskins, A.L., T.A. Gossett, C.B. Musgrave, and A.W. Weimer, "The effect of ultrathin ALD films on the oxidation kinetics of SiC in high-temperature steam," Chemical Engineering Science, 201, 230-236 (2019).
43) O'Toole R.J., C.J. Bartel, M.U. Kodas, A.J. Horrell, S. Ricote, N.P. Sullivan, C.J. Gump, C.B. Musgrave, and A.W. Weimer, "Particle atomic layer deposition of alumina for sintering yttria-stabilized cubic zirconia," Journal of the American Ceramic Society (DOI: 10.1111/jace.16091, 2018), 110, 2283-2293 (2019).
44) McNeary, W.W., C. Ngo, A.E. Linico, J.W. Zack, A.M. Roman, K.M. Hurst, S.M. Alia, J. W. Medlin, S. Pylypenko, B.S. Pivovar, and A.W. Weimer, "Extended Thin Film Electrocatalyst Structures via Pt Atomic Layer Deposition," ACS Applied Nano Materials 1, 6150-6158 (2018).
45) Bartel, C.J., S.L. Millican, A.M. Deml, J.R. Rumptz, W. Tumas, A.W. Weimer, S. Lany, V. Stevanovic, C.B. Musgrave, and A.M. Holder, "Physical descriptor for the Gibbs energy of inorganic crystalline solids and temperature-dependent materials chemistry," Nature Communications, 9, Article 4168 (2018).

46) Rowe, S.C., I. Hischier, A.W. Palumbo, B.A. Chubukov, M. A. Wallace, R. Viger, A. Lewandowski, D.E. Clough and A.W. Weimer., "Nowcasting, Predictive Control, and Feedback Control for Temperature Regulation in a Novel Hybrid Solar-Electric Reactor for Continuous Solar-Thermal Chemical Processing," Solar Energy, 174, 474-488 (2018).
47) Ehrhart, B.D., B J. Ward, B.M. Richardson, K.S. Anseth, and A.W. Weimer, "Partial Flocculation for Spray Drying of Spherical Mixed Metal Oxide Particles," Journal of the American Ceramic Society, 101 (10), 4452-4457 (2018).
48) McNeary, W.W., A.E. Linico, C. Ngo, S. vanRooij, S. Haussener, M.E. Maguire, S. Pylypenko, and A.W. Weimer, "Atomic Layer Deposition of TiO_2 for Stabilization of Pt Nanoparticle Oxygen Reduction Reaction Catalysts," Journal of Applied Electrochemistry, 48, 973-984 (2018).
49) Yacob, T.W., R. Fisher, K.G. Linden, and A.W. Weimer, "Pyrolysis of human feces: gas yield analysis and kinetic modeling," Waste Management , 79, 214-222 (2018).
50) Chubukov, B.A., A.W. Palumbo, S.C. Rowe, M.A. Wallace, and A.W. Weimer, "Design and fabrication of pellets for magnesium production by carbothermal reduction," Metallurgical and Materials Transactions B (https://doi.org/10.1007/s11663-018-1309-5), 49(5), 2209-2218 (2018).
51) Hoskins, A.L., A.H. Coffey, C.B. Musgrave, and A.W. Weimer, " Nanostructured Mullite Steam Oxidation Resistant Coatings for Silicon Carbide Deposited via Atomic Layer Deposition, Journal of the American Ceramic Society, 101, 2493-2505 (2018).
52) Arifin, D. and A.W. Weimer, "Kinetics and Mechanism of Solar-thermochemical H_2 and CO Production by Oxidation of Reduced CeO_2," Solar Energy, 160, 178-185 (2018).
53) Zhang, S., E. Yu, S. Gates, W. Cassata, J. Makel, A.M. Thron, C. Bartel, A.W. Weimer, R. Faller, P. Strieve, and J.W. Tringe, "Helium Interactions with Alumina formed by Atomic Layer Deposition show Potential for Mitigating Problems with Excess Helium in Spent Nuclear fuel," J of Nuclear Materials, 499, 301-311 (2018).
54) Rowe, S.C., M.A. Wallace, A. Lewandowski, R.P. Fisher, W.R. Cravey, D.E. Clough, I. Hischier, and A.W. Weimer, "Experimental Evidence of an Observer Effect in High-Flux Solar Simulators," Solar Energy, 158, 889-897 (2017).
55) Chubukov, B.A., A.W. Palumbo, S.C. Rowe, M.A. Wallace, and A.W. Weimer, "Enhancing the Rate of Magnesium Oxide Carbothermal Reduction by Catalysis, Milling, and Vacuum Operation," Industrial & Engineering Chemistry Research, 56 (46), 13602-13609 (2017).
56) Al-Shankiti, I., B.D. Ehrhart, and A.W. Weimer, "Isothermal Redox for H_2O and CO_2 Splitting – A Review and Perspective," Solar Energy, 156, 21-29 (2017).
57) Yang, L., L. Jiang, W. Fu, A.W. Weimer, X. Hu, and Y. Zhou, "TiO_2 Quantum Dots Grown on Graphene by Atomic Layer Deposition as Advanced Photocatalytic Hybrid Materials," Applied Physics A, 123, 416 (2017).
58) Lubers, A.M., W.W. McNeary, D.J. Ludlow, A.W. Drake, M. Faust, M.E. Maguire, M.U. Kodas, M. Seipenbusch, and A.W. Weimer, "Proton Exchange Membrane Fuel Cell Flooding Caused by Residual Functional Groups after Platinum Atomic Layer Deposition," Electrochimica Acta, 237, 192-198 (2017).
59) Hischier, I., B.A. Chubukov, M.A. Wallace, R.P. Fisher, A.W. Palumbo, S.C. Rowe, A.J. Groehn, and A.W. Weimer "A Novel Experimental Method to Study Vapor Metal Condensation/Oxidation: Mg in CO and CO_2 at Reduced Pressures," Solar Energy, 139, 389-397 (2016).
60) Groehn, A.J., A. Lewandowski, R. Yang, and A.W. Weimer, "Hybrid Radiation Modeling for Multi-phase Solar-thermal Reactor Systems Operated at High-temperature," 140, 130-140 Solar Energy (2016).
61) Ehrhart, B.D., C.L. Muhich, I. Al-Shankiti, and A.W. Weimer "System Efficiency for Two-step Metal Oxide Solar Thermochemical Hydrogen Production – Part 1: Thermodynamic Model and Impact of Oxidation Kinetics," International Journal of Hydrogen Energy, 41 (44), 19881-19893 (2016) 10.1016/j.ijhydene.2106.07.109.
62) Ehrhart, B.D., C.L. Muhich, I. Al-Shankiti, and A.W. Weimer "System Efficiency for Two-step Metal Oxide Solar Thermochemical Hydrogen Production – Part 2: Impact of Gas Heat Recuperation and

Separation Temperatures," International Journal of Hydrogen Energy, 41 (44), 19894-19903 (2016) 10.1016/j.ijhydene.2106.07.110.

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65) Lubers, A.M., A. W. Drake, D. J. Ludlow, and A. W. Weimer, "Electrochemical Hydrogen Pumping using a Platinum Catalyst made in a Fluidized Bed via Atomic Layer Deposition," Powder Technology, 296, 72-78 (2016).
66) Bartel, C.J., C.L. Muhich, A.W. Weimer, and C.B. Musgrave, "Aluminum Nitride Hydrolysis Enabled by Hydroxyl-Mediated Surface Proton Hopping," Applied Materials & Interfaces, 8, 18550-18559 (2016).
67) Muhich, C.L., B.D. Ehrhart, I. Alshankiti, B.J. Ward, C.B. Musgrave, and A.W. Weimer, "A Review and Perspective of Efficient H2 Generation via Solar Thermal Water Splitting," Wiley Interdisciplinary Reviews: Energy and Environment, 5, 261-287 (2016).
68) Aston, V.J. and A.W. Weimer, "Comparison of Ni and Co Mixed Metal Ferrites for H_2 Production Using Chemical Looping," Energy Technology, 4 (10), 1188-1199 (2016).
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70) Muhich, C.L., Brian D. Ehrhart, Vanessa A. Witte, Samantha L. Miller, Eric N. Coker, Charles B. Musgrave, and Alan W. Weimer," Predicting the Solar Thermochemical Water Splitting Ability and Reaction Mechanism of Metal Oxides: a Case Study of the Hercynite Family of Water Splitting Cycles," Energy & Environmental Science, 8, 3687 - 3699 (2015).
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ALAN W. WEIMER (Inventor)
(UNITED STATES PATENTS)
Issued US Patents

[1] "Stability of Refractory Materials is High Temperature Steam," U.S. Patent 11,753,717 B2 (2023).

[2] "Core Shell Ceramic Particle Colloidal Gel and Solid Oxide Fuel Cell Electrolyte," U.S. Patent 11,613,502 B2 (2023).

[3] "Catalyst, Structures, Reactors, and Methods of Forming Same," U.S. Patent 11,426,717 (2022).

[4] "Compositions and methods for making and using thermostable immunogenic formulations with increased compatibility of use as vaccines against one or more pathogens" U.S. Patent 11,364,293 (2022)

[5] "Apparatus and method for recovery of material," U.S. Patent 10,829,834 B2 (2020)

[6] "Compositions and methods for making and using thermostable immunogenic formulations with increased compatibility of use as vaccines against one or more pathogens," U.S. Patent 10,751,408 (2020)

[7] "Carbothermal reduction reactor system, components thereof, and methods of using same," U.S. Patent 10,400,309 (2019)

[8] "Highly porous ceramic material and method of using and forming same," U.S. Patent 10,138,169 (2018)

[9] "Catalyst support structure, catalyst including the structure, reactor including a catalyst and method of forming same," U.S. Patent 9,643,159 (2017)

[10] "Vapor deposition process for the manufacture of coated particles," U.S. Patent 9,546,424 (2017)

[11] "Method of depositing an inorganic film on an organic polymer," U.S. Patent 9,376,750 (2016)

[12] "Methods and apparatus for gas-phase reduction/oxidation processing," U.S. Patent 9,399,575 (2016)

[13] "Semi-continuous vapor deposition process for the manufacture of coated particles," U.S. Patent 9,284,643 (2016)

[14] "Implantable devices having ceramic coating applied via an atomic layer deposition method," U.S. Patent 9,279,120 (2016)

[15] "Ultra-thin metal oxide and carbon-metal oxide films prepared by atomic layer deposition (ALD)," U.S. Patent 9,090,971 (2015)

[16] "Solar-thermal Reaction Processing," U.S. Patent 8,673,035 (2014)

[17] "Methods for Producing Coated Phosphors and Host Material Particles Using Atomic Layer Deposition Methods," U.S. Patent 8,637,156 (2014)

[18] "Metal Ferrite Spinel Energy Storage Devices and Methods for Making and Using Same," U.S Patent 8,397,508 (2013)

[19] "Rapid Solar-thermal Conversion of Biomass to Syngas," U.S. Patent 8,287,610, being prosecuted (2012)

[20] "Metal Ferrite Spinel Energy Storage Devices and Methods for Making and Using Same," U.S. Patent 8,187,731 (2012)

[21] "Methods for Producing Coated Phosphors and Host Material Particle Using Atomic Layer Deposition Methods," U.S. Patent 8,163,336(2012)

[22] "Titanium Dioxide Particles Coated via an Atomic Layer Deposition Process," U.S. Patent 8,133,531 (2012)

[23] "Dental Composite Filler Particles," U.S. Patent 7,396,862 (2008)

[24] "Nanomaterials for Quantum Tunneling Varistors," U.S. Patent 7,132,697 (2006)

[25] "Solar-thermal Fluid-wall Reaction Processing," U.S. Patent 7,033,570 (2006).

[26] "Nanocoated Primary Particles and Method for Their Manufacture," U.S.Patent 6,913,827 (2005)

[27] "Solar Thermal Aerosol Flow Reaction Process," U.S. Patent 6,872,378 (2005).

[28] "Insulating and Functionalizing Fine Metal–containing Particles with Conformal Ultra-thin Films," U.S. Patent 6,713,177 (2004).

[29] "Rapid Conversion of Metal-containing Compounds to Form Metals or Metal Alloys," U.S. Patent 6,689,191 (2004).

[30] "Atomic Layer Controlled Deposition on Particle Surfaces," U.S. Patent 6,613,383 (2003).

[31] "Low Temperature Oxidation Using Supported Molten Salt Catalysts," U.S. Patent 6,565,820 (2003).

[32] "Method to Produce a Transition Metal Carbide from a Partially Reduced Transition Metal Compound," U.S. Patent 6,495,115 (2002).

[33] "Method for Making Submicrometer Transition Metal Carbonitrides," U.S. Patent 5,756,410 (1998).

[34] "Silicon Nitride/Silicon Carbide Composite Densified Materials Prepared Using Composite Powders," U.S. Patent 5,643,843 (1997)

[35] "Moving Bed Process for Carbothermally Synthesizing Nonoxide Ceramic Powders," U.S.

Patent 5,607,297 (1997)

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[38] "Carbothermal Synthesis Precursors," U.S. Patent 5,384,291 (1995).

[39] "Method for Making Submicrometer Carbides, Submicrometer Solid Solution Carbides, and the Materials Resulting Therefrom," U.S. Patent 5,380,688 (1995).

[40] "Moving Bed Reactor Process," U.S. Patent 5,370,854 (1994).

[41] "Process for Preparing Silicon Carbide," U.S. Patent 5,340,417 (1994).

[42] "Process for Preparing Ultrafine Aluminum Nitride Powder," U.S. Patent 5,219,804 (1993).

[43] "Method for Producing Uniform, Fine Boron-Containing Ceramic Powders," U.S. Patent 5,194,234 (1993).

[44] "High Yield Manufacturing Process for Silicon Carbide," U.S. Patent 5,190,737 (1993).

[45] "Process for Preparing Aluminum Nitride Powder via Controlled Combustion Nitridation," U.S. Patent 5,126,121 (1992).

[46] "Apparatus for Producing Uniform, Fine Ceramic Powders," U.S. Patent 5,110,565 (1992).

Alan W. Weimer
(Honors & Awards)

2018 National Academy of Inventors (NAI) Fellow
2017 AIChE Lifetime Achievement Award in Particle Technology (to be presented Oct, 2017)
2016 Distinguished Alumni Award, Boardman High School (Youngstown, Ohio)
2015 AIChE Nanoscale Science and Engineering Forum (NSEF) Forum Award
2015 AIChE Research Excellence in Sustainable Engineering Award
2014 Department of Chemical Engineering Faculty Advising Award 2011 Excellence in Bio-Derived Technology Commercialization Award (Colorado Cleantech Industry Assoc.)
2011 Excellence in Bio-Derived Technology Commercialization Award (CO Cleantech Industry Assoc.)2010 AIChE Excellence in Process Development Research Award
2010 Dean's Award for Outstanding Research (College of Engineering and Applied Science)
2010 University of Colorado Physical Sciences Company of the Year Award (Sundrop Fuels)
2009 AIChE Thomas Baron Award in Fluid-Particle Systems
2007 University of Colorado Physical Sciences Company of the Year Award (ALD NanoSolutions, Inc.)
2006 University of Colorado Distinguished Engineering Alumni (DEA) Award
2006 Inducted into University of Colorado at Boulder "Pinnacles of Inventorship" Group
2006 Frost & Sullivan Excellence in Technology Award (ALD NanoSolutions, Inc.)
2005 Best Paper Award (U.S. Best Zone Paper, ASEE)
2005 Keynote Address (Chemical Reactor Engineering X, Zacatecas, Mexico)
2005 University of Colorado College of Engineering and Applied Science Faculty Research Award
2005 University of Colorado Boulder Faculty Assembly Research, Scholarly and Creative Work Award
2005 United States Department of Energy Hydrogen Program R&D Award

2004 University of Colorado at Boulder Inventor of the Year Award
2004 R&D 100 Award
2004 Best Paper Award (U.S.Western Region, ASEE)
2004 Best Paper Award (Solar 2004 National Conference, Portland)
2004 Best Paper Award (Rocky Mountain ASEE Meeting)
2004 Fellow of the AIChE
2002 Outstanding AIChE National Student Chapter Award (Advisor)
2002 University of Colorado Faculty Fellowship
2002 Left Hand Laurel Community Service Award (Niwot, CO)
2000 & 2001 Faculty Mentor Award (awarded by graduating seniors)
2001 Special Teaching Recognition Award (awarded by graduating seniors)
1997 AIChE Particle Technology Forum *Fluidized Process Recognition* Award
1996 Mid-Michigan AIChE *Distinguished Service Award*
1995 Dow Chemical Company *Excellence in Science* Award
1994 Dow Chemical Company *Ceramics Technology Leadership* Special Recognition Award
1993 Dow Chemical Company Research *Inventor of the Year* Award
1993 Dow Chemical Company *Ceramics Milestone* Award
1993 Mid-Michigan AIChE *Professional Progress* Award
1992 Mid-Michigan Sigma Xi "*Best Published Scientific Paper of the Year* Award"
1991 *Distinguished Young Engineering Alumnus* (University of Cincinnati)
1990 Dow Chemical Company *Spangenberg Ceramics Founder's Award*
1989 Dow Chemical Company *Ceramics Milestone* Award
1976 Herman Schneider Medal (University of Cincinnati College of Engineering)

Alan W. Weimer
(165 Invited Presentations)

"Persistence in the Face of Adversity to Achieve your Goals," presented at the 2023 Annual AIChE Meeting, Orlando, FL (November 6, 2023)

"Creation and Science – The Universe and Historical Accuracy of the Bible," presented at International Crossroads, Boulder, CO (October 27, 2023)

"Persistence in the Face of Adversity," 14th Annual Colorado Center for Advanced Ceramics Conference, Golden, CO (August 16, 2023)

"Persistence Against the Headwinds," presented at Genentech, San Francisco, CA (March 2, 2023).

"The Role of Ultra-thin Particle ALD Films on Lithium Metal Oxide Cathode Materials," Ross Group Distinguished Speaker, School of Materials Science and Engineering, College of Engineering, Architecture, and Technology, Oklahoma State University – Tulsa, Tulsa, OK (August 31, 2022).

"Two-step Solar-thermochemical Water Splitting – The Path Forward," Plenary Address, 11th Int'l Solar Energy Conference, SOLARIS 2021, Tokyo, Japan (September 27, 2021).

"Extremely Durable Concrete using Methane Decarbonization Nanofiber Co-products with Hydrogen," Hydrogen Summit – H2 Shot Advanced Pathways, Washington, DC (August 31, 2021); "Modular Processing of Flare Gas for Carbon Nanoproducts," Carbon Management and Oil and Gas Research Conference, Pittsburgh, PA (August 27, 2021).

"Solar thermochemical redox Perspectives – Reactors, Kinetics, & Thermodynamics," invited graduate seminar at Niigata University, Niigata, Japan (August 26, 2021).

"Two-step Solar-thermochemical Water Splitting – The Path Forward," Keynote Address, Near Zero-Carbon Combustion Technology, KAUST Research Conference, Jeddah, Saudi Arabia (June 23, 2021)

"Impact of High Pressure and Fine Particle Size on Fluidized Bed Reactor Performance," Invited presentation for Karl Jacob's retirement, Annual 2020 AIChE Meeting, San Francisco, CA (November 18, 2020).

"Improved Understanding of the Role of Ultra-Thin ALD Films on Lithium Metal Oxide Cathode Particles," Invited presentation for Prof. Christine Hrenya's retirement, Annual 2020 AIChE Meeting, San Francisco, CA (November 19, 2020).

"Improved Understanding of the Role of Ultra-thin ALD Films on Lithium Metal Oxide Cathode Materials," invited graduate seminar at Missouri University of Science and Technology, Rolla, MO (September 29, 2020)

"Why ALD Nanofilms on Cathode Materials Improve Li-ion Battery Performance," invited graduate seminar at Yale University, New Haven, CT (March 4, 2020)

"Particle Functionalization by ALD: Fundamentals, Applications, and Path Forward," Plenary Address, PARTEC 2019, Nuremberg, Germany (April 9, 2019)

"Particle Functionalization by ALD: Fundamentals, Applications, and Path Forward," presented at BASF, Ludwigshafen, Germany (April 4, 2019)

"Lab Curiosity to Commercial Process to (maybe) High-valued Commercial Products," presented at German Space Center, Cologne, Germany (April 3, 2019)

"Two-step Solar-thermal Water Splitting – The Path Forward," presented at Shell Oil, Amsterdam, The Netherlands (April 1, 2019)

"Two-step Solar Thermochemical Water Splitting – The Path Forward," invited graduate seminar presented at Texas Tech University, Lubbock, TX (Sept 17, 2018)

"Particle ALD," invited presentation to Shell Oil Company, Houston, TX (September 19, 2018)

"Particle Functionalization by ALD," invited graduate seminar presented at Montana State University, Bozeman, MT (October 8, 2018)

"An Industrial/Academic Career of Learning, Challenge, Opportunity & Fun," Lifetime Achievement Award in Particle Technology Keynote Address, 2017 Annual AIChE Meeting, Minneapolis, MN (Nov 2, 2017).

"Two-step Solarthermal Water Spliting – The Path Forward," Keynote Address, Symposium in Honor of Professor E.A. Fletcher, 2017 Annual AIChE Meeting, Minneapolis, MN (Oct 31, 2017).

"Solarthermal Chemistry – The Path Forward," University Distinguished Lecture presented at Texas A & M University at Qatar, Doha, Qatar (March 23, 2017)

"Particle Surface Functionalization Using Atomic Layer Deposition," invited Workshop on Nanomaterials Manufacturing for Energy Applications," Georgia Tech University, Atlanta, GA (January 17, 2017)

"Solarthermal Chemistry – The Path Forward," invited Plenary Lecture (Thermochemistry) presented at the Asia Pacific Solar Research Conference, Canberra, Australia, ACT (Nov 29 to Dec 1, 2016)

"Solarthermal Chemistry – The Path Forward," Keynote Address - presented at the American Society of Mechanical Engineers (ASME) Power and Energy Conference, Charlotte, NC (June 30, 2016)

"What it takes to succeed in the 21st Century," Invited Commencement-related Address at Boardman High School Honors Assembly, Distinguished Alumni Award, Youngstown, OH (May 25, 2016)

"Solarthermal Chemical Processing" invited graduate seminar presented at Virginia Commonwealth University, Richmond, VA (March 2, 2016)

"Commercializing an Ultra-high Temperature Process – What it Takes, and The Future for Hybrid Solarthermal/Electric or Natural Gas Processing," invited graduate seminar presented at Georgia Institute of Technology, Atlanta, GA (February 4, 2016)

"An Entrepreneurial Path from Academic Innovations to Commercial Products," Australian National University Dean's Colloquium, November 23, 2015 (Canberra, Australia, ACT)

"Functionalization of Fine Particles by Atomic and Molecular Layer Deposition (ALD/MLD)", invited Plenary Award Presentation, AIChE Nanoscale Science and Engineering Forum Award, Salt Lake City, UT (November 9, 2015).

"Hybrid Chemical Looping Hydrogen Process Using Mixed Metal Oxides", invited presentation, 250th Meeting of the American Chemical Society Meeting, Boston, MA (August 18, 2015).

"Near-isothermal Doped-hercynite redox Cycle for Solar-thermal Water Splitting", invited presentation, 227th Meeting of the Electrochemical Society, Chicago, IL (May 27, 2015).

"Needed Research Focus for Achieving Cost-effective and Reliable Solar-thermal Water Splitting", invited presentation, 227th Meeting of the Electrochemical Society, Chicago, IL (May 28, 2015).

"We Need You", invited Keynote Address, 2015 Rocky Mountain Student Regional AIChE Conference, University of Colorado, Boulder, CO (April 18, 2015).

"Laboratory Curiosity to Commercial Process – What it Takes," invited graduate seminar presented at Missouri University of Science and Technology, Rolla, MO (March 3, 2015).

"Differences Between Engineering Programs at a Major University in the United States and in Australia," invited presentation at the Engineering College Educational Retreat, The Australian National University, Canberra, Australia (ACT), November 27, 2014.

"Laboratory Curiosity to Commercial Process – What it Takes," invited seminar presented at The ANU Energy Change Institute, The Australian National University, Canberra, Australia (ACT) (November 24, 2014).

"Laboratory Curiosity to Commercial Process – What it Takes," invited graduate seminar presented at South Dakota School of Mines and Technology, Rapid City, SD (October 21, 2014).

"Functionalization and Application of Fine Particles Coated by Atomic/Molecular Layer Deposition (Particle ALD/MLD)," invited graduate seminar presented at the North Carolina State University, Raleigh, NC (November 11, 2013).

"Efficient Generation of H_2 by Splitting Water with an Isothermal Redox Cycle," invited Distinguished Lecture, ETH Zurich, Swiss Federal Research Institute, Zurich, Switzerland (October 21, 2013).

"Solarthermal Chemical Processing Using Particle Flow Reactors – Challenges and Opportunities," invited Sheldon Friedlander Plenary Lecture, American Association for Aerosol Research, Portland, OR (October 2, 2013).

"Sustainable Solarthermal Chemical Processing," invited presentation at the University of Colorado/Kingdom of Saudi Arabia Alumni Event, Riyadh, Saudi Arabia (January 10, 2013).

"Designed Materials for Solar Thermochemical Redox Cycling," invited presentation at Australian National University, Canberra, Australia, ACT (September 10, 2012).

"Sustainable Chemical Processing Using Concentrated Sunlight," invited presentation at the 2012 Annual AIChE Meeting, Pittsburgh, PA (October 30, 2012).

"Designed Materials for Solarthermochemical Water Splitting," invited presentation at the 4th International Conference on Ceramics, Chicago, IL (July 17, 2012).

"Designed Materials for Solarthermochemical Redox Cycling", invited presentation at the Rocky Mountain Section of the Materials Research Society, Boulder, CO (January 25, 2012).

"Styles of Invention", invited presentation at the University of Colorado Technology Transfer Office Awards Dinner, Denver, CO (January 17, 2012).

"Renewable Solarthermal Production of Fuels from Biomass and Water", invited presentation at Ohio State University, Columbus, OH (January 11, 2012).

"Overview of Solar Fuels Technology", invited presentation at Global Clean Energy Congress & Exhibition, Calgary, Alberta, Canada (October 31, 2011).

"Nanofilms for Solarthermochemical Redox", invited presentation at Nano-Renewable Energy Summit, Golden, CO (October 25, 2011).

"Rapid Solar-thermal Conversion of Biomass to Syngas", invited presentation at American Chemical Society National Meeting, Denver, CO (August 29, 2011).

"Functionalization of Fine Particles by Atomic/Molecular Layer Deposition (ALD/MLD)", invited presentation at Tyco Electronics, Menlo Park, CA (July 14, 2011).

"Rapid Solar-thermal Conversion of Biomass to Syngas", invited presentation at Danforth Plant Science Center, St. Louis, MO (April 13, 2011).

"Rapid Solar-thermal Conversion of Biomass to Syngas", invited presentation at Phycal, St. Louis, MO (April 13, 2011).

"The Role of High-temperature Solar in Low Carbon Hydrogen", invited presentation at Toyota Sustainable Mobility Seminar, La Jolla, CA (April 5, 2011).

"Intellectual Property and Entrepreneurial Opportunities Resulting from Basic Science Research - Creating Real Jobs", invited presentation at Executive Night Speaker Series, Regis University, March 24 (2011).

"Renewable Solar-thermal Production of Fuels from Biomass and Water", invited presentation at Transformational Energy Seminar Series, University of Maryland, College Park, MD (February 26, 2011).

"Thin Film Ferrites by ALD for Solar Redox Cycles", invited presentation at Sun to Petrol Conference, Sandia National Laboratory, Albuquerque, NM (February 23, 2011).

"Renewable Solar-thermal Production of Fuels from Biomass and Water", invited presentation at Ball Aerospace, Boulder, CO (February 11, 2011).

"Functionalization of Ultrafine Particles with Nanothick Controlled Films," invited presentation at the 35th International Conference on Advanced Ceramics and Composites (ICACC) Meeting, Daytona Beach, FL (January 27, 2011).

"Commercial Success Through Fundamental Understanding, Persistence and Cost/Performance Benefits," presented at the 2010 International Conference on Energy, Energy Logistics and the Environment, invited presentation, October 8, 2010 (Denver, CO).

"Functionalization of Ultra-fine Particles with Nano-thick Controlled Films," NSTI Nanotech 2010, invited Keynote Address, June 22, 2010 (Anaheim, CA).

"Metal Ferrite Spinels for Solar-thermal Water Splitting Redox Cycles," invited Keynote Address presentation TMS 2010 Annual Meeting, February 17, 2010 (Seattle, WA).

"Solar-thermal Process Intensification," invited presented at Sandia National Laboratory, February 11, 2010 (Livermore, CA)

"Functionalization of Fine Particles by Atomic/Molecular Layer Deposition (ALD/MLD)," invited presented at Lawrence Livermore National Laboratory, February 10, 2010 (Livermore, CA)

"Functionalization of Fine Particles by Atomic/Molecular Layer Deposition (ALD/MLD)," presented at Lehigh University Graduate Seminar, January 20, 2010 (Bethlehem, PA)

"Functionalization of Fine Particles by Atomic/Molecular Layer Deposition (ALD/MLD) ," invited presentation to be made at the 2009 Annual Meeting of the American Institute of Chemical Engineers, Particle Technology Forum – Awards Lecture, November 11, 2009 (Nashville, TN)

"Particle ALD – Academic Invention to Commercial Development ," invited presentation at the 2009 Annual Meeting of the American Institute of Chemical Engineers, Chemical Engineering Principles for Nanotechnology - Plenary Session, November 11, 2009 (Nashville, TN)

"Particle ALD/MLD Functionalization of Fine Particles," invited presentation at the 216th Meeting of the Electrochemical Society, October 6, 2009 (Vienna, Austria)

"Solar-thermal Production of Renewable Fuels," presented at ETH Zurich (Swiss Federal Research Institute), Zurich, Switzerland (May 24, 2009).

"The Future of Biofuels and Chemical Engineering Opportunities," presented at the 10th International Chemical Engineering Student Conference, Monterrey, Mexico (February 19, 2009).

"Solar-thermal Production of Renewable Fuels from Water and Biomass," presented at Oregon State University Graduate Seminar, Corvallis, OR (January 26, 2009).

"The Future of Biofuels," presented at the 2008 International Food Service Distribution Conference, Pittsburgh, PA (October 13, 2008).

"Solar-thermal Production of Renewable Fuels from Water and Biomass," presented at University of Minnesota Graduate Seminar, University of Minnesota, Minneapolis, MN (October 1, 2008).

"Solar-thermal Production of Renewable Fuels from Water and Biomass," presented at University of Michigan Graduate Seminar, University of Michigan, Ann Arbor, MI (September 23, 2008).

"Renewable Biofuels Using Rapid Solar-thermal Processing," Featured presentation at the Second Generation Biofuels (Innovation in BioFuels 2008) Conference, Baltimore, MD (May 14, 2008).

"Functionalization of Ultrafine Particles by Atomic Layer Deposition," invited presentation made to the Ceradyne Corp. Technology Review, Cost Mesa, CA (March 13, 2008).

"Renewable Fuels via Solar-thermal Processing," Keynote Address presented at the 2008 Solar PACES Biennial Meeting, Las Vegas, NV (March 7, 2008).

"Solar-thermal Production of Renewable Fuels from Water and Biomass," presented at University of California at Santa Barbara Graduate Seminar, Santa Barbara, CA (February 7, 2008).

"Functionalization of Ultrafine Particle by Atomic Layer Deposition," presented at the Particle Technology Center Graduate Seminar, University of Florida, Gainesville, FL (January 22, 2008).

"Commercial Success through Fundamental Understanding and Persistence," Plenary Address presented at CHEMECA 2007 in Melbourne, Australia (September 25, 2007).

"Functionalization of Fine Particles using Atomic Layer Deposition," Keynote Address presented at CHEMECA 2007 in Melbourne, Australia (September 24, 2007).

"Particle Coating in Fluidized Bed Reactors", Invited Keynote Address presented at EuroCVD 16, The Hague (Netherlands), (September 17, 2007).

"Functionalization of Ultrafine Particles by Atomic Layer Deposition," presented at Procter and Gamble Corporation, Cincinnati, OH (February 27, 2007).

"Functionalization of Ultrafine Particles by Atomic Layer Deposition," presented at University of Cincinnati Graduate Seminar, Cincinnati, OH (February 27, 2007).

"Functionalization of Ultrafine Particle by Atomic Layer Deposition, "presented at Millennium Chemical Company, Baltimore, MD (April 30, 2007).

"Solar-thermal Processing to Split Water," presented at the Department of Chemical and Biological Engineering, Colorado State University, Fort Collins, CO (April 20, 2007).

"Solar-thermal Water Splitting Using a Zn/ZnO Thermochemical Cycle," 2007 Inaugural Energy symposium UNLV, Las Vegas, NV (August 16, 2007)

"Solar-thermal Splitting of Water Using a Rapid ZnO Thermochemical Cycle: Fundamentals and Experimental Results", presented at the Department of Chemical Engineering, Illinois Institute of Technology, Chicago, IL, Graduate Seminar (November 29, 2006).

"Functionalization of Ultrafine Particles Using Atomic Layer Deposition (Particle ALD^{TM})", presented at the 2nd Engineered Particle Applications Conference, presented in Las Vegas, NV (October 19, 2006).

"Solar-thermal Water Splitting for the Production of Hydrogen", presented at the Renewables to Hydrogen Forum, National Hydrogen Association, Albuquerque, NM (October 5, 2006).

"Functionalization of Ultrafine Particles by Atomic Layer Deposition", presented at the Department of Chemical Engineering, West Virginia University, Morgantown, WV, Graduate Seminar, (September 15, 2006).

"Solar-thermal Production of Hydrogen from Water", presented at the Solar 2006 Meeting, Denver, CO (July, 13, 2006).

"Functionalization of Ultrafine Particles by ALD," A.W. Weimer, paper presented at the Int'l Fine Particle Research Institute, Santa Barbara, CA (June 26, 2006).

"Solar-thermal Processing to Produce Hydrogen from Water," presented to Xcel Energy, Boulder, CO (April 28, 2006).

"Functionalized Nanoparticles – a Tutorial," (web cast) A.W. Weimer, tutorial presented at the 5th World Congress on Particle Technology, Orlando, FL (April 25, 2006).

"Micron and Nanoparticle Coating Using Atomic Layer Deposition", presented at the E.V. Murphree Awards Session in Honor of L.S. Fan, American Chemical Society 231st Annual Meeting, Atlanta, GA (March 28, 2006).

"Particle ALD™ Technology," A.W. Weimer, paper presented at the Nanomaterials Project seminar series, Air Products and Chemicals Corp., Allentown, PA (March 7, 2006)

"Particle ALD™ Technology," A.W. Weimer, paper presented at Osram Sylvania Corporation, Towanda, PA (March 8, 2006).

"Solar Thermochemical Splitting of Water: Theory, Application, and Materials Research Opportunities", presented at Stanford University – Global Climate and Energy Project Seminar, Palo Alto, CA (February, 2006).

"Novel Polymer Particle ALD™ Extrusion Method for Producing Polymer/Ceramic Nanocomposites", presented at Lyondell Chemical Company, Cincinnati, OH (November, 2005).

"Functionalizing Ultrafine Particles by Atomic layer Deposition (ALD)", presented at the Department of Chemistry and Biochemistry, University of Denver, Denver, CO (October, 2005).

"Solar-thermal Reactors: Fundamentals and Applications," presented at the Department of Chemical Engineering, University of New Mexico, Albuquerque, NM, Graduate Seminar, (October, 2005).

"Synthesis of Boron – rich Boron Carbide Powders for Improved Ceramic Armor," presented at Ceradyne Corporation and the U.S. Army, Costa Mesa, CA (September, 2005).

"Solar-thermal Reactors: Fundamentals and Applications," Keynote Lecture, Chemical Reactor Engineering X International Conference, Zacatecas, Mexico (August, 2005).

"Solar-thermal Processing to Decarbonize Natural Gas," presented at the Department of Mechanical and Process Engineering, ETH-Zurich (Swiss Federal Research Institute), Graduate Seminar, (June, 2005).

"Functionalizing Ultrafine Particles by Atomic Layer Deposition," presented at Cabot Corporation, Albuquerque, NM, (June, 2005).

"Atomic Layer Deposition to Control Particle Surface Functionality," presented at the Department of Chemical Engineering, University of Missouri, Rolla, MO, Graduate Seminar, (September,2004).

"Solar-thermal Production of Hydrogen," presented at General Electric Global Research laboratory, Niskayuna, NY (September, 2004).

"Solar-thermal Production of Hydrogen,"presented at the Arizona Public Service Company, Phoenix, AZ (July, 2004).

"Solar Thermochemical Production of Hydrogen," invited tutorial presented at the 2004 International Solar Energy Conference, Portland, OR (July, 2004)

"Commercial Success Through Fundamental Understanding and Persistence," Keynote Lecture, International World PARTEC2004 Conference, Nuremberg, Germany (March, 2004).

"Conformal Encapsulation of Fine Particles with Ceramic Nanolayers, presented at the Department of Chemical Engineering, University of Pittsburgh, Graduate Seminar, Pittsburgh, PA (February, 2003).

"Passivating Ultrafine iron Powders by Atomic layer Deposition Surface Modification."presented at the Swiss Federal Research Institute (ETH-Zurich, Switzerland)(May, 2003).

"Solar-thermal Processing to Produce Hydrogen", presented at the Paul Scherrer Institute, Villigen, Switzerland (May, 2003).

"Fundamentals, Development, and Commercialization of the Rapid Carbothermal Reduction Process," presented at the Sandvik Tungsten Carbide Production Facilities," Coromant, United Kingdom (England) (May, 2003).

"Atomic Layer Deposition Processing to Control the Surface Chemistry of Ultrafine Powders, presented at the Swiss Federal Laboratories for Materials Testing and Research (EMPA), Thun, Switzerland (July, 2003).

"The Rapid Carbothermal Reduction Synthesis of Boron Carbide Powders," presented at the Wacker-Chemie GmbH Chemical Company, Kempten, Germany (August, 2003).

"Rapid Solar-thermal Decarbonization of Methane," presented at General Electric Global Research laboratory, Niskayuna, NY (August, 2003).

"Atomic Layer Deposition to Control Surface Chemistry of Fine Particles," presented at General Electric Global Research laboratory, Niskayuna, NY (August, 2003).

"Boron Content Modification of Boron Carbide," presented at the Army Research Laboratories, Aberdeen, MD (March, 2003).

"Solar-thermal Processing for Thermochemical Cycles to Split Water," presented at the University of Nevada at Las Vegas (UNLV), Las Vegas, NV (November, 2003).

"Solar-thermal Production of Hydrogen," presented at Arizona Public Service Company, Phoenix, AZ (November, 2003).

"Producing Boron-rich Boron Carbide Powders by Rapid Carbothermal Reduction," presented at Ceradyne, Inc., Costa mesa, CA (January, 2002).

"Conformal Encapsulation of Fine Particles with Ceramic Nanolayers," presented at NIST Magnetic Technology Division Seminar, Boulder, CO (January, 2002).

"Designing for Benign Hydrogen Synthesis in the Sunny Desert SW United States," Environmental Design Architecture Guest Lecture, Boulder, CO (February, 2002).

"Fine Nickel Powder Synthesis from Nickel Oxalate Precursors," presented at OMG Americas, Research Triangle park, NC (April, 2002).

"Solar-thermal Processing to Produce Hydrogen," presented at Chevron-Texaco, Richmond, CA (September, 2002).

"Solar-thermal Processing to Produce Hydrogen," presented at the Electric Power Research Institute (EPRI), Palo Alto, CA (September, 2002).

"Solar-thermal Processing to Produce Hydrogen," presented at General Motors Corporation, Warren, MI (October, 2002).

"ALD on Particles," presented at The Dow Chemical Company, Corporate Seminar Series, Midland, MI (October, 2002).

"Atomic Layer Deposition on Particles – Chemistry and Engineering," presented to the Department of Chemical Engineering - Graduate Seminar, University of California at Santa Barbara (October, 2002)

"Solar-thermal Processing to Produce Hydrogen," presented at BP, Houston, TX (October, 2002).

"Solar-thermal Processing to Produce Hydrogen," presented at the Arizona Public Service Company – Pinnacle West, Phoenix, AZ (November, 2002).

"Atomic layer Deposition – Chemistry and Engineering," presented to the Department of Process Engineering, Graduate Seminar, Swiss Federal Institute of Technology (ETH-Zurich, Switzerland) (December, 2002).

"Solar-thermal Dissociation of Natural Gas in an Aerosol Flow Reactor," presented at the Paul Scherer Institute, Villigen, Switzerland (December,2002).

"Commercializing Novel Particle Technologies," presented to the Department of Process Engineering, Graduate Seminar, Swiss Federal Institute of Technology (ETH-Zurich, Switzerland) (December, 2002).

"Rapid Process for the Benign Synthesis of Hydrogen," presented to the Department of Chemical Engineering - Graduate Seminar, Colorado School of Mines and Technology (November, 2001)

"Rapid Solar-thermal Dissociation of Natural Gas," presented to the Department of Chemical Engineering - Graduate Seminar, University of Maryland, (October, 2001).

"Rapid Solar-thermal Dissociation of Natural Gas," presented at BP, Anchorage, AK (October, 2001).

"Rapid Solar-thermal Dissociation of Natural Gas," presented to the Department of Chemical Engineering - Graduate Seminar, University of Colorado, (September, 2001).

"Rapid Carbothermal Reduction Processing using Aerosol Flow Reactors," presented to the Department of Materials Science and Engineering – Graduate Seminar, University of Washington (June, 2000)

"Rapid Carbothermal Reduction Processing using Aerosol Flow Reactors," presented to the Department of Chemical Engineering – Graduate Seminar, University of Arizona, Tucson, AZ (October, 1998)

Processing and Properties of NanoPhase SiC/Si_3N_4 Composites, invited presentation at the 5^{th} Annual International Conference on Composites Engineering, Las Vegas, NV (July, 1998).

"Rapid Carbothermal Reduction Processing using Aerosol Flow Reactors," presented to the Department of Chemical Engineering – Graduate Seminar, University of California at Los Angeles (UCLA) (April, 1998)

"Rapid Carbothermal Reduction Processing using Aerosol Flow Reactors," presented to the Department of Chemical Engineering – Graduate Seminar, University of New Mexico (December, 1997)

"Tutorial – Advanced Ceramic Materials Synthesis," presented at the 16^{th} Annual Conference of the American Association for Aerosol Research, invited Tutorial Lecture (October, 1997)

"Plenary Paper: High Temperature Aerosol Processing to Synthesize Advanced Ceramic Powders," invited Plenary presentation at the 1996 Annual Conference of The American Association for Aerosol Research, Orlando, FL, October, 1996.

"High Temperature Formation Processes for Producing Fine Advanced Ceramic Powders – invited Tutorial," presented at the 1995 Annual AIChE Meeting, Miami Beach, FL, November 1995.

"Rapid Carbothermal Reduction Processing & Kinetics for Synthesizing Fine Silicon Carbide Powders," presented to the Department of Chemical Engineering – Graduate Seminar, University of Colorado, Boulder, CO, August, 1995.

"Rapid Carbothermal Reduction Processing & Kinetics for Synthesizing Fine Silicon Carbide Powders," presented at the University of Cincinnati, Graduate Seminar, Cincinnati, OH, June, 1995.

"Flow Reaction Processing for the Manufacture of Fine Ceramic Powders," Dow Chemical Company Excellence in Science Award Presentation, Midland, MI, March, 1995.

"Synthesis of Nitride Ceramic Powders," invited Plenary Presentation, 96th Annual American Ceramics Society Meeting, Indianapolis, IN, April, 1994.

"Non-Oxide Ceramic Powder Synthesis," mid-Michigan Inorganic Science Group 1st Quarter Tutorial Presentation, Midland, MI, March, 1994.

"Synthesis of Nitride Ceramic Powders," presented at Oregon State University, Graduate Seminar, Corvallis, OR, February, 1994.

"Synthesis and Processing of Non-Oxide Ceramics," Tutorial Lecture, 1993 Annual AIChE Meeting, St. Louis, MO, November, 1993.

"Synthesis and Processing of Non-oxide Ceramics," presented at the University of Cincinnati, Cincinnati, OH, October, 1993.

"Rapid Carbothermal Reduction of Boron Oxide in a Graphite Transport Reactor," Sigma Xi "Best Paper of the Year Award Presentation," Midland, MI, January, 1993.

"Nonoxide Powders from Solid Reactants via a Rapid Carbothermal Reduction Aerosol Process," invited lecture presented at the Engineering Foundation Vapor Phase Manufacture of Ceramics Conference, Kona, Hawaii, January, 1992.

"A Rapid Carbothermal Reduction Process for the Manufacture of Boron Carbide," presented at The Ohio State University, Columbus, OH, October, 1991.

"The Reasons to Pursue a Ph.D. in Chemical Engineering," presented to the University of Cincinnati AIChE Student Chapter, Cincinnati, OH, March 1991.

"Rapid Carbothermal Reduction of Boron Oxide in a 2000°C Graphite Transport Reactor," presented at Oregon State University, Corvallis, OR October, 1990.

"Rapid Carbothermal Reduction of Boron Oxide in a 2000°C Graphite Transport Reactor," presented at the University of Colorado, Boulder, CO, October, 1990.

"The General Phenomena of High Pressure Gas-Solid Fluidization," presented at The Ohio State University, Columbus, OH, October, 1988.

"Fundamentals and Applications of High Pressure Fluidized Beds of Fine Carbon Powders," presented at the University of Cincinnati, Cincinnati, OH, February, 1988.

"High Pressure Fluidization Studies," presented at the University of Colorado, Boulder, CO, February, 1987.

"High Pressure Fluidization Fundamentals," presented at the University of Colorado, Boulder, CO, March, 1984.

Alan W. Weimer
(Service Activities)

Primary Service Contributions: *CU Campus* - Founding Executive Director of the Colorado Center for Biorefining and BioProducts (C2B2) 2006-2016, 2013 member of the OCG Director Search Committee, 2008-2011 CU Energy Initiative Leadership Team (leading to RASEI), CU CRCW (Council on Research and Creative Work) member 2002-2006, Chair of CU CRCW 2005-2006, CU CRCW Awards Committee 2007; *CEAS* - College 1st Level Review Committee 2012-present, Vice Chair 2014/2015, Chair 2015/2016, College Scholarship Committee 2012 – present, PI for NSF/NERC Group Proposal 2011, Energy and Sustainability College Initiative 2008-2011; *ChBE* – U/G Program Committee 2010-2018, Graduate Program Committee 2018-present, Shop Committee Chair 2014-present, GAANN Renewable and Sustainable Energy Program Chair 2006-2009, 2012-2017, Move to JSCBB Building Chair 2010-2012, Tenure and Promotion Committee 2010-2012, Graduate Seminar Committee 2007-2009 (Chair, 2009), Faculty Search Committee Chair 2009, founder of the ChBE Co-operative Education Program in 2000 (Chair 2000-2004); ChBE ABET Chairman 2000-2007; ChBE AIChE Undergraduate Student Chapter Advisor (1996-2001; 2003-2007), including hosting the 12 university Rocky Mountain U/G AIChE Meeting in Boulder in 2007; taught U/G seminar class, U/G Sr Advisor, U/G Materials Option Advisor; *External Professional* – Area Chair WCPT 8 (April, 2018), Associate Editor, Journal of Nanoparticle Research 2006-2020, External Advisory Committee University of Cincinnati 2012-present, Global Project Coordinator International Partnership for a Hydrogen Economy – U.S.A., Japan, Israel, Switzerland, Spain, Germany, France 2005-2011, AIChE Particle Technology Forum Executive Committee 1999-2006, Treasurer 200-2002, Vice Chair 2002-2004, Chair 2004-2006 (received AIChE Service Award in 2006), Treasurer 5th World Congress on Particle Technology held in Orlando, FL 2006, Planning Committee 4th World Congress on Particle Technology held in Sydney, Australia 2002, Director AIChE Materials and Engineering Sciences Division 1997-1999, Chair International Topical Ceramics Conference held in San Diego 1996, AIChE Area 8d Ceramics Vice Chair 1993-1995, Chair 1995-1997, AIChE Area 3b Fluidization and Fluid-Particle Systems Vice Chair 1988-1990, Chair 1990-1991; *Community* – 2002 received the Niwot Left Hand Laurel Service Award for the two year negotiation with Qwest (now Century Link) to build a Communications Service Facility at the corner of Niwot Rd and 79th Street which aesthetically fits with the Niwot Community – this building received an award for being the most aesthetically appearing such structure in the SW United States.

Professional Activities

Founding Executive Director – Colorado Center for Biorefining and Biofuels – 2007 to 2017 (CU, CSU, CSM, NREL, State of Colorado Collaboratory for Renewable Energy)
Associate Editor – Journal of Nanoparticle Research, 2006-2020
Global Project Coordinator – International Partnership for the Hydrogen Economy (www.IPHE.net) – "Solar-driven High Temperature Thermochemical Production of Hydrogen" 2005-2007
Editorial Board – Powder Technology (Elsevier) (2005-present)
Advisory Board – Journal of Nanomaterials (Hindawi) (2006-20120
External Advisory Committee, University of Cincinnati College of Engineering, 2012-present
Chair, AIChE Particle Technology Forum, 2004- 2006
Vice Chair, AIChE Particle Technology Forum, 2002-2004
Treasurer, AIChE Particle Technology Forum, 2000-2002
Executive Committee, AIChE Particle Technology Forum, 1999-2006
Treasurer, Fifth World Congress on Particle Technology (held April, 2006 in Orlando, FL)
Planning Committee Fourth World Congress on Particle Technology (Sydney, Australia, July, 2002)
Director, AICHE Materials and Engineering Sciences Division (MESD),1997-1999
Editor, AIChE Journal Special Issue, "Ceramics Processing", 43 (11A) 1997
Chair, 1996 International Topical Ceramics Conference (San Diego, CA)
Chair, AIChE Area 8d (Ceramics), 1995-1997
Vice Chair, AIChE Area 8d (Ceramics), 1993-1995
Chair, AIChE Area 3b (Fluidization and Fluid-Particle Systems), 1990-1991

Vice Chair, AIChE Area 3b (Fluidization and Fluid-Particle Systems), 1988-1990
Director, Mid-Michigan AIChE Local Chapter, 1994-1996.
Chair, Mid-Michigan AIChE Continuing Education Committee, 1994-1996.
Chair, Mid-Michigan AIChE National Engineer's Week Outreach Activities
Reviewer for Powder Technology, Chemical Engineering Science, Journal of the American Ceramic SocietyIndustrial and Engineering Chemistry Research & Development, Journal of Solar Energy Engineering, Energy, Journal of Materials Science, AIChE Journal, Journal of Nanoparticle Research, Advanced Materials, Chemistry of Materials, Advanced Functional Materials, Surface and Coating Technology,
AIChE Session Chair – Annual Meeting of AIChE (1989-present, yearly)

University Activities

ChBE ARPAC Reporting Chair (2017/18)
CU College of Engineering & Applied Science 1st Level Review Committee; Vice Chair, 2014, 2013-
ChBE Shop Committee Chair; 2014-present
CU College of Engineering & Applied Science Scholarship Committee; 2013-
ChBE GAANN Renewable & Sustainable Energy Program Chair; 2012 -
ChBE Department Chair Search Committee; 2011-2012
ChBE Promotion/Tenure Committee; 2011-2012
ChBE Move Committee Chair; 2010-2012
PI for Engineering College group NSF NERC proposal submitted 9/2011
PI for ChBE group GAANN proposal submitted 1/2012
RASEI (Renewable and Sustainable Energy Institute) Fellow, 2010 - 2011
ChBE Graduate Seminar Committee, 2008-present; Chair Spring, 2009
ChBE Faculty Seminar Committee, 2008-present; Chair
CU Energy and Sustainability Engineering College Initiative, 2008-present
CU Energy Initiative Leadership Team Faculty Affiliate, 2008-present
CU CRCW Awards Committee (Boulder Campus), 2007
ChBE Awards Committee, ChBE (2007 - present)
ChBE Undergraduate Program Committee (2006-present)
Chair, Council on Research and Creative Work (CRCW), Boulder Campus, 2004-2006
CU CRCW, Boulder Campus (2003-2004)
ChBE AIChE Undergraduate Student Chapter Advisor (1996-2001; 2003-2007)
ChBE ABET (Engineering Accreditation) Chairman (2000-2007); 2012-
ChBE Undergraduate Senior Advisor (2007 - present)
ChBE Undergraduate Sophomore and Materials Option Advisor 1997-2003; 2005-2006)
Chair, First Level Review Committee, ChBE (2006-present)
ChBE Faculty Search Committee, (1997-1998; 2005-2006)
ChBE Shop Committee Chairman, (1997-1999; 2011-2012)
ChBE Industrial Advisory Committee (1996-1998)
ChBE Undergraduate Seminar (1997-1998)
ChBE Safety Committee Chairman, (1997-2000)
ChBE Co-operative Education Chairman (2000-2004; co-founder of co-op program in 2000)

Alan W. Weimer
(Industrial Experience)

PROFESSIONAL LICENSING
Licensed PE - State of Colorado (# 20279)

ENTREPRENEURIAL ACTIVITIES
Copernican Energy (Boulder, CO)
Co-founded in November, 2006 (Univ. of Colorado spinoff); merged with Sundrop Fuels in July, 2008; served as CTO of Sundrop Fuels from July, 2008 until July, 2011

ALD NanoSolutions, Inc. (Broomfield, CO)
Co-founded in June, 2001 (Univ. of Colorado spinoff)
Merged with Forge Nano in January, 2020 (www.ForgeNano.com)

Industrial Experience

The Dow Chemical Company, Midland, MI (1980 - 1996)
1980-1983: Sr. Research Engineer, Organic Chemicals Research
1983-1987: Project Leader, Chemicals Research/Engineering Research & Development
1987-1991: Research Leader, Ceramics & Advanced Materials Research (C&AMR)
1991-1994: Research Associate, C&AMR
1994-1995: Technical Leader, C&AMR
1995-1996: Associate Scientist, C&AMR

Co-Inventor of Commercial Technology

Invention, Fundamentals, Development, and Commercialization of the "Rapid Carbothermal Reduction" Process for Producing Super-Ultrafine Ceramic Powders

Additional Industrial (Non-Ceramics) R&D Contributions

Developed a Low Cost Melt Polymerization Process for the Manufacture of Polycarbonate Resin
Developed a Fluidized Bed Agglomeration Process for the Manufacture of Superadsorbent Polymers
Developed a Fluidized Bed Polymeric Coating Process for the Timed Release of Agricultural Chemicals
Developed a Fixed Bed Catalytic Reactor Process for the Manufacture of Methyl Methacrylate Monomer
Developed a High Pressure Fluidized Bed Fischer Tropsch Process for the Manufacture of Mixed Alcohols
Chairman of The Dow Chemical Company Technology Status Analysis Teams for (1) the Manufacture of Hydrogen Peroxide by a Novel Membrane Process (Sarnia, Ontario) and (2) the Catalytic Extraction Process for Recovering and Recycling Compounds from Hazardous Chlorinated Wastes (Freeport, TX)
Dow Chemical Company U.S. Area Dioxin Task Force

Primary Teaching Contributions: Since 1996, has transformed the CHEN capstone design sequence from an academic one-semester course that was in dissarray, to a well-organized two-semester industrial based projects course with a well-defined mini-design project in the fall followed by an industrial based open-ended project supported by an industrial liaison in the spring. Over 150 companies have been recruited to support the program - typically arranges for over 25 projects per year (both sections), two course capstone sequence, introduced current events topics into the class to help meet ABET guidelines, typically highest workload and strongest FCQ evaluations in spite of workload - for U/G classes in ChBE for the last few years; presents invited educational papers at Annual AIChE meetings in capstone design sessions (Best Practices in Senior Design); has mentored 120 U/Gs for independent study, Sr. Thesis, Discovery Learning Apprentice Program, and summer REU since joining the faculty in 1996 – 27 have gone on to obtain Ph.D.s,; has mentored 4 M.S. and 35 graduated Ph.D.s, (+ 6 currently advised) since 1996 (six of whom have become academics) – 100% job placement.

CEAS Article published February, 2022: "Senior capstone design course marks 25 years of real-world problem solving with industry partners" https://www.colorado.edu/chbe/2022/02/28/senior-capstone-design-course-marks-25-years-real-world-problem-solving-industry-partners

(Teaching Evaluations, since 2009)

CHEN-4520 Chemical Process Synthesis (1st semester capstone design)
CHEN-4530 Chemical Engineering Projects (2nd semester capstone design)

Spring, 2009 to Fall, 2019 (Ratings 1 to 6)		Ratings (A.W. Weimer/Dept. Average)	
Course & Term	Availability	Course Challenge	Learning Experience
CHEN-4530 (Spring, 2009)	5.4/4.9	5.4/4.8	5.0/4.6
CHEN-4520 (Fall, 2010)	5.7/5.0	5.3/4.8	5.1/4.7
CHEN-4530 (Spring, 2011)	5.7/5.1	5.6/4.8	5.3/4.7
CHEN-4520 (Fall, 2011)	5.6/5.0	5.3/4.8	5.3/4.6
CHEN-4530 (Spring, 2012)	5.2/5.0	5.1/4.7	5.0/4.7
CHEN-4520 (Fall, 2012)	5.7/4.9	5.5/4.7	5.6/4.7
CHEN-4530 (Spring, 2013)	5.6/4.9	5.5/4.7	5.8/4.7
CHEN-4530 (Spring, 2014)	5.7/5.0	5.4/4.7	5.4/4.7
CHEN-4520 (Fall, 2014)	5.3/5.0	5.3/4.7	4.5/4.8
CHEN-4530 (Spring, 2015)	5.3/5.0	5.0/4.8	4.9/4.7
CHEN-4520 (Fall, 2015)	5.2/5.1	5.5/4.9	5.4/4.7
CHEN-4530 (Spring, 2016)	5.3/5.1	5.2/4.9	5.2/4.8
CHEN-4520 (Fall, 2017)	5.1/5.0	5.6/4.8	5.2/4.7
CHEN-4530 (Spring, 2018)	5.5/5.3	5.2/4.7	5.2/5.0
CHEN-4520 (Fall, 2018; section 1)	5.2/5.3	4.8/4.9	4.4/4.8
CHEN-4520 (Fall, 2018; section 2)	5.1/5.3	4.4/4.9	3.8/4.8
CHEN-4530 (Spring, 2019; section 1)	5.7/5.4	5.2/4.8	5.3/5.0
CHEN-4530 (Spring, 2019; section 2)	5.5/5.4	5.1/4.8	4.6/5.0
CHEN-4520 (Fall, 2019; section 1)	5.3/5.1	5.3/4.9	5.2/4.7
CHEN-4520 (Fall, 2019; section 2)	5.2/5.1	5.4/4.9	5.2/4.7

Spring/Fall, 2020 (Ratings 1 to 5): Learned		Ratings (A.W. Weimer/Dept. Average)	
	Real World Issues	Be a critical thinker	Creative Thinking
CHEN-4530 (Spring, 2020, 1)	4.84/4.55	4.74/4.48	4.74/4.47
CHEN-4530 (Spring, 2020, 2)	4.94/4.55	4.85/4.48	4.81/4.47
CHEN-4520 (Fall, 2020, 1)	4.34/4.15	4.38/4.15	4.44/4.06
CHEN-4520 (Fall, 2020, 2)	4.72/4.15	4.38/4.15	4.52/4.06

CHEN-4530 (Spring, 2021, 1)	4.81/4.44	4.73/4.31	4.76/4.24
CHEN-4530 (Spring, 2021, 2)	4.79/4.44	4.79/4.31	4.79/4.24
CHEN-4520 (Fall, 2021, 1)	4.57/4.23	4.45/4.16	4.35/4.09
CHEN-4520 (Fall, 2021, 2)	4.65/4.23	4.35/4.16	4.30/4.09
CHEN-4530 (Spring, 2022, 1)	4.87/4.55	4.69/4.4	4.63/4.28
CHEN-4530 (Spring, 2022, 2)	4.87/4.55	5.00/4.4	4.87/4.28
CHEN-4520 (Fall, 2022, 1)	4.88/4.09	4.75/4.13	4.75/4.02
CHEN-4520 (Fall, 2022, 2)	4.63/4.09	4.38/4.13	4.50/4.02
CHEN-4530 (Spring, 2023,1)	5.00/4.39	4.82/4.31	4.82/4.19
CHEN-4530 (Spring, 2023,2)	5.00/4.39	4.80/4.31	4.70/4.19

Comments from Past Students

Prof. Weimer has received numerous emails from graduating seniors, with comments including:

“The structure of this class was unique. We met twice at the beginning of the semester before getting sent on our way for our capstone project. I enjoyed his weekly DEI announcements that Prof. Weimer sent out and made me feel like he was trying to make the class more inclusive which I appreciated. I honestly have no issue with Professor Weimer because he was always available for questions and always provided valuable resources to complete our capstone.”

“This was a great capstone class! I enjoyed working with the company; it felt like an internship.”

I will miss you Dr. Weimer!“

“Professor Weimer is a top notch professor who truly tries to make the courses that he teaches interesting.“

“Dr. Weimer is an excellent teacher for Sr. Design. He is great at providing support and connecting us with liaisons.”

“Dr. Weimer made engineering accessible and was available to support anytime.”

“Dr. Weimer did a great job organizing the course. The liaisons and projects were all their own unique challenges, and he explained and gave resources at the very beginning of the semester.”

“Overall, this design project has been very challenging, and has been a good opportunity for me to apply the material from the last several years to an open-ended, real-world problem.”

Dr. Weimer expressed a genuine interest in helping teams with their projects and learn!“

“He is very passionate and excited about each project and shows genuine interest in his students. I wanted to do well because of how kind he was”

“Great class, really gave a lot of experience for industry!” “I really appreciate that the department offers the course with real projects and liaisons at actual companies.”

“Alan Weimer's individual experiences in industry and design were interesting.”

“There is a lot of learning value in this course, I found it very useful in applying my chemical engineering knowledge while also learning a lot of new skills.”

“The ability to think creatively on the project was appreciated. It really helped me think outside the box”.

“Overall, I really enjoyed this course and felt this was my favorite class in chemical engineering because I am more project orientated. I really appreciated gaining real world experience by working in groups and working with liaisons. I also felt this really prepared me to enter the work force by teaching us how to be professional and present well to a large audience. I really appreciated the freedom in allowing us to complete the projects as well as what time frame we needed to complete them.”

“Prof Weimer was extremely engaged and invested in his students' success and it showed. He dedicated lots of time outside of class to assist and guide students. I think he was an effective teacher and I personally appreciated his use of anecdotes to supplement and connect with what we were learning in class. I wish more professors would connect the (sometimes dry) class material with personal and professional experience; this makes the content more engaging and interesting.”

“You have a really good handle on teaching this complex course with many moving parts. It was impressive to see it all go so smoothly.”

“Great course overall, learned a lot along the way for the project and it’s been a fantastic experience interacting with liaisons.”

Having industry projects that can be chosen based on team interest is extremely valuable. This class was very challenging, but developing the skills to work in an industry-like setting with a company was amazing. I gained professional development, and learned how to deal with real-world challenges well. Overall, I highly recommend that CU keep this format of capstone design. This class is highly challenging, but with that comes valuable experience. The structure of the class needs no improvement.“

“The most effective aspects of this course was the direct and example-driven way in which concepts were thought. Equations were not just given but students were required to use them, and that led to learning.”

“Awesome course that provides an awesome opportunity to do meaningful industry work.“

“Great professor. Glad to end my time here with such a knowledgable and kind person!”

“I like the opportunity to work on a realistic, open-ended project. I think it has been a very valuable experience. However, this has definitely not been a two-credit course by any means.“

“Al Weimer says what he thinks and I love it. He consistently gives direct, insightful, and useful feedback and is always willing to help students out if they are willing to ask for help“

I thoroughly enjoyed this class. It was by far the class I learned the most from throughout the chemical engineering curriculum. It prepares students for whatever field they go into.“

“Professor Weimer is a great and knowledgeable professor. In the past, he has challenged us to solve problems we have never seen before, which greatly helped to prepare us for our futures. It is clear that he is highly skilled in his profession and consistently helped when needed. I appreciate being able to learn from such a smart person. I think that his expectations are realistic and have allowed me to find successes in his courses, which I am very grateful for.”

“I think this class is NECESSARY for the major and I believe it is structured near perfectly; preference on liaison work and group performance helps encourage engineers to develop intelligent, creative, and independent thought to tackle complex problems in a group setting.”

“Giving students free reign with these projects is fantastic for learning. The failures and successes I have had in this class with group work, technical approaches, and creative thought have taught me more than most of my other undergraduate courses, and I feel more prepared for the future and how to approach problems.”

“Economics was a very important lecture that I am glad we learned and the spreadsheet is awesome.”

“I liked learning about the industry in general unlike the other dorks that spent their time complaining about the course.”

“I really enjoyed the time I've spent working on content for this class. Having the opportunity to work with real people on real projects was incredible. I loved having the opportunity to travel to the company site, and see physical representations of the systems that I've been learning about. Having the design project the previous semester really helped prepare me for the scale of the work necessary for the sponsored project. I think the interactions during the course of the semester with peers, liaisons, and the instructor were all positive, and are a fantastic way to bring the undergraduate to a fitting conclusion.”

“I think this is a great course and teaches undergrads preparing to leave university how to work on a real problem, and how to work on teams. Ideally students wouldn't need to work virtually and working virtually required a learning curve, but students should be able to adapt none the less. I think this is a great class and think it really shows this department cares about its students.”

“Even though this class is fairly independent for the students, Dr. Weimer did an excellent job facilitating the requirements (especially when it became difficult during covid), and keeping us students informed of his expectations.”

“Overall the course provided an amazing platform to develop, apply, and refine many skills that I have learned over my education. I thought the available projects were all interesting and truly spanned a variety of chemical and biological engineering disciplines. I also thought the format of the class worked really well. The experience of working with a team on one of these projects was truly invaluable. Additionally, the professor was always available for questions and was clearly invested in the students - thank you!”

“I liked the passion you showed for the applications of these concepts. I think you are a great faculty to talk about industry experiences. I liked pace of the lectures, to an extent, as they moved pretty fast and taught a lot information which kept students on their heels. I also liked the complexity of the homework assignments (reactors, economics, etc.). Some students will complain about these assignments but popular opinion is not correct in this case. Those assignments were extremely challenging and beneficial. Most importantly, I liked how you stood up to all of the students regarding the difficulty of the project. This education should either make or break us, not comfort us.”

“Having the course be flexible was incredibly helpful and made the projects more important. It made it so we could focus on what was important to the project and made the whole ordeal less stressful. I cannot stress how much I appreciate the class being flexible. Having the guidelines and biweekly reports were also really good for keeping us on track.”

“This is a very cool class! It exemplifies "you get out what you put in" and I've learned a lot from the liaisons and working with my team…. Thank you for being flexible in dealing with the myriad of issues that COVID-19 has introduced! It was good to have another rather unpanicked voice while it felt like the sky was falling.”

“Good course, great professor. He really went the extra mile to secure interesting and useful projects for our class. I enjoyed working on my project just as much as hearing about the work others were doing and the discoveries they were making.”

“Taking this class you can really tell how much Weimer cares about the seniors and their design experience! I thought the organization of this class was good and made sense for the type of class it is. Weimer was always willing to listen, help, and adapt the course to students and the problems they were having with their projects. I enjoyed the projects offered and enjoyed mine. I think one of the most beneficial features of this class was relationship students got to build with liaisons. It gave a good insight to industry life and how professional engineers work together.”

“This course if a great way to conclude the chemE curriculum. It's a real challenge to take things into your hands and deliver a good, finished product.”

“I really enjoyed this course as it was very different from any other courses. It was unfortunate that things became the way it is due to Covid but that was a hard transition for everyone. I believe the course continued the best it could with the situation given. I believe this class is a great method of getting a foot into the "real" industry”

“Thank you so much for everything this year. I have learned more in this class than many of the other CHEN courses I've taken combined. Plus, it's always fun to design something new.”

“Dear Professor Weimer, I interviewed with a midstream oil and gas company in Denver on Thursday. I brought along both my mini design project as well as my Natural Gas Expansion Facility report. The people I interviewed with were impressed, and I was able to talk intelligently with them about the cryogenic plant, and pipeline projects they have in the works. I felt confident in my knowledge of their company because of my experiences in this class. This company does not generally hire from CU, but still unanimously decided to hire me on as an intern this summer. I know the projects had a lot to do with that. They would also like to participate in the design projects next year. I wanted to say thank you so much for putting together these projects and creating a class with an incredible high learning value. It made all the difference for me.”

“Thank you for providing such a great learning experience and for relating academics to relevant industry experience as you have. The latter is something I believe is much too absent from academics, however this job opportunity just proves how well you were able to combat that and offer your students an experience that goes beyond academic understanding and truly prepares them for what they are about to experience. I appreciate all the guidance you have provided and I hope I have been able to provide some form of a complement to the class as a student. Thank you for everything!”

“I hope you still remember me, I am … one of your senior students last year. I’m writing this email from the other side of the Earth (Saudi Arabia). I remember you saying in the class that you like to hear about your students and how they are doing after leaving CU. As you know I’m working in …. , one of SABIC’s affiliates….. today we are having a shutdown in our bubble bed reactor due to blockage in the plate holes, and I’m assigned to check inside the reactor…when I go over any aspects that I learned in CU, I remember you…I’m writing this email to express my warm thanks to you”

“I just wanted to take a quick second and thank you for everything I learned in Process Design last fall. I thought the course was really interesting and learned a lot. As a result of this, my design team and I chose to partner with … for our design project in the spring because we were interested in the challenge of working with an actual design company for the project. We had a challenging project, but actually did pretty well with it, which led me to consider process design as a career. I'm happy to report I just got my first job offer from a process design company in …. and it's really too good to turn down! So I just wanted to thank you again, a significant portion of what I'll be doing at this job directly relates to the material I learned in Process Design, so thank you for your patience and dedication as our instructor!”

“It was a pleasure working with you and the … liaisons on this project. Thank you for all of your help and support. Having to rework mini design definitely helped our team improve and learn how to more thoroughly design many unit operations. Good luck with your future research endeavors.”

“Thanks for all your help this semester! It was a wonderful experience!”

“Thanks for a great year of designing. The class was demanding but I learned a ton.”

“Thank you for an amazing design semester. I can honestly say I've learned more in this class than in any other class. Thank you. Also, thank you for being an amazing advisor.”

“It was a great experience being in your class this year, despite all the stress! Hope you have a good summer.”

“Al is a great professor and really cares about his students. The most effective part was having biweekly reports due to keep us on track.”

“Professor Weimer really knows what he is doing for this class and provides us with a really cool and unique opportunity to do something real world and applied that will help us go into the real world with some valuable industry skills. I thought the level of guidance from both Professor Weimer and our liaison was appropriate and pushed us to find solutions while also supporting us in a way that was beneficial.”

“This class was by far and away the most useful and enjoyable class I have ever taken in my undergraduate career. The culmination of all the knowledge I have learned over the years, coupled with collaboration with peers and professionals in industry was honestly invaluable. To me, I felt like the "cherry on top of the cake" of this engineering major. I was able to see for the first time everything come together for me, and all my hard work finally paying off.”

“Professor Weimer has always been extremely accessible for this course and is always willing to help. I feel this course and CHEN4520 with Professor Weimer are where I truly became a chemical engineer. The amount of material covered, the engineering skills learned, and the course load were nowhere near easy but I believe that extra push is truly what separates the ChemE department from other colleges.”

“This was a near perfect class in how it was set up, including the semester before.”

“Alan Weimer is a great professor who definitely cares about his students and the the learning value of his class. This was a very challenging course.”

“Also, thanks for teaching this course. It was one of extreme challenge but also of very high learning value. I am glad I took both semesters of Design with you, and I am sad the current juniors will not be able to have the same experience this coming year. I hope your sabbatical this coming year goes great!”

“I forgot to mention, I used the list you sent out of companies receiving SBIR/STTR grants and landed a paid internship with … in Cambridge, MA (founded out of MIT)!; They were very impressed with the Mini-Design and Design projects (especially economics). Maybe you can use this as a success story for futures semesters :)”

“Thank you so much for your help this semester. Your class has been very insightful and I appreciate the enthusiasm you have for teaching.”

“Although this course warranted blood, sweat, tears, and more time than I could have imagined....I learned a great amount about design, myself, and working with teams this semester!”

“This course was definitely very challenging, but the challenge has prepared us for the mini design project as well as hopefully the full design project in the spring. Professor Weimer definitely does his best to try and encourage students and has very high expectations, which I appreciate.”

“Dr. Weimer is a fantastic professor. The difficulty and work load of the class was high, but this allows the students to learn more. I am glad I took Design with him.”

“This course was amazing because we were able to put together everything we've learned so far in CBEN and turn it into a real-world project. We were able to meet with outside liaisons on a weekly basis and get consistent feedback from many different sources.”

“Thank you again for all of your guidance, help, advice, and wisdom over the past year with Mini and Senior Design. I definitely feel like I learned a lot about process engineering, working with an outside liaison was very insightful, and I definitely feel I have received a great education from the Chemical Engineering department at CU.”

“Professor Weimer cares about his student so much, and he makes sure we know that he is always there to help us. I'm not sure if he ever sleeps though because I get emails from him at all hours of the night. That being said, I've never had a professor respond so quickly to emails, especially not ones pertaining specifically to his class.”

“Hi Professor, I just wanted to shoot you an email because I was speaking with {another former student} today about your class … As I was talking with her, something completely unexpected happened. I realized I missed your class =]. Your class was the first time at CU that I felt like I could be an engineer. Anyway, I just wanted to let you know that even with all the grief I gave you about Mini Design being hard, I think it was that project that made me an engineer.”

“I enjoyed getting to hear some of the real life engineering stories as they helped me to see the application of many of the things we have learned about in previous classes. Although the final mini-design project was a lot of work, I felt that it helped me to learn more about the actual engineering process than I would have if the project had been less in depth. This is not an easy class by any means and the work load is heavy (especially towards the end of the semester), but all in all it has been invaluable in furthering my education. Thank you Professor Weimer.”

“Having the opportunity to work on an actual company project taught me what to expect as a process engineer and has been a great learning experience...”

“The two-semester design course was easily the class I learned the most in during college. Honestly, it is difficult for me to offer an sort of constructive feedback on a course that is structured so well.”

“Dr. Weimer is hands down the best instructor in the ChemE department. He is genuine, kind, and respectful. Yes, the class requires a certain level of sophistication in terms of delivering the tasks, yet Dr. Weimer made it enjoyable.”

“Thank you for your help. The senior design course was one of the more enjoyable classes I took at CU.”

“I really appreciated this opportunity to work with a real company on a real life problem. Very cool class!”

“The instructor's anecdotes and stories related to the engineering design process from his own experience were interesting and a nice break from the technical content of design project related questions.”

“Professor Weimer was always willing to meet with us to answer questions which was helpful.”

“Dr. Weimer does a good job with this class. He definitely knows his stuff and is very approaching.”

“I enjoyed this class a lot! I really appreciate the amount of effort you put into finding us all industry liaisons to work with and into helping us all succeed in this class! Thanks for being a fantastic professor!”

“I really enjoyed having Dr. Weimer as a professor these past two semesters. He is so kind and caring when it comes to students and I really appreciated that. He is always supportive of each group and student that he interacts with.”

“Most Effective: 1) communication/availability 2) approachability/personability 3) access to resources 4) real-world connections Least Effective: 1) n/a”

“The amount of effort that Dr. Weimer put into helping us connect with industry liaisons encouraged me to try even harder.”

Alan W. Weimer

(Directed Research)

Theses Directed

Peter Czerpek, M.S.1998
David Chacon, M.S. 1999
Patrick Hilbert, M.S. 1999
Andrew Yoder, M.S.2003
Jeffrey Wank, Ph.D. 2003
Jaimee Dahl, Ph.D., 2004
Casey Carney, Ph.D. 2005
Jennifer Walsh, Ph.D. 2005
Luis Hakim, Ph.D. 2006
Christopher Perkins, Ph.D. 2006
Chad Smith, M.S., 2008
Todd Francis, Ph.D., 2008
David King, Ph.D., 2008
Xinhua Liang, Ph.D., 2008
Jonathan Scheffe, Ph.D., 2010
Yun Zhou, Ph.D., 2011
Paul Lichty, Ph.D. 2011
Janna Martinek, Ph.D., 2012
Bryan Woodruff, Ph.D., 2012
Victoria Aston, Ph.D., 2013
Elizabeth Saade, Ph.D., 2013
Darwin Arifin, Ph.D., 2013
Troy Gould, Ph.D., 2014
Aaron Palumbo, Ph.D., 2014
Christopher Muhich, Ph.D., 2014
Alan Izar, M.S., 2014
Alia Lubers, Ph.D., 2015
Staci van Norman, Ph.D., 2015
Brian Ehrhart, Ph.D., 2017
Scott Rowe, Ph.D., 2018
Boris Chubukov, Ph.D., 2018
Ibraheam Alshankiti, Ph.D., 2018
Amanda Hoskins, Ph.D., 2018
Christopher Bartel, Ph.D., 2018
William McNeary, Ph.D., 2019
Samantha Miller, Ph.D., 2019
Jacob Clary, Ph.D., 2020
Sarah Bull, Ph.D., 2021
Rebecca O'Toole, Ph.D., 2021
Gage Sowell, M.S., 2021
Megan English, M.S. 2022
Julia Hartig, Ph.D., 2022
Justin Tran, Ph.D., 2023
Hailey Loehde-Woolard, Ph.D., expected 2024
Davis Conklin, Ph.D., expected 2025
Katarina Odak, Ph.D., expected 2025
Julie Nguyen, Ph.D., expected 2025
Jessica Hauck, Ph.D., expected 2025
Brian Garcia-Hernandez, Ph.D., expected 2028
Linnea Helenius, Ph.D., expected 2028
Madelyn Bennett, Ph.D., expected 2028

Postdoctoral Research Associates Directed

Dr. Victoria Aston (2013-2014)
Dr. Karen Buechler (2001-2003)
Dr. Casey Carney (2005-2007)
Dr. Boris Chubukov (2017-present)
Dr. Todd Francis (2009)
Dr. Hans Funke (2005-2009)
Dr. Arto Geoehn (2014-2016
Dr. Christopher Gump (2003-2005)
Dr. Illias Hischier (2013-2015)
Dr. David King (2009-2011)
Dr. Jianhua Li (2007-2010)
Dr. Xinhua Liang (2009-2011)
Dr. Janna Martinek (2012-2013)
Dr. Christopher Muhich (2015-2016)
Dr. Brian Neltner (2010-2011)
Dr. Aaron Palumbo (2014-2017)
Dr. Christopher Perkins (2007-2008)
Dr. Scott Rowe (2018)
Dr. Staci Van Norman (2015-2016)
Dr. Kent Warren (2019-present)
Dr. Guodong Zhan (2005-2006)

Professional Research Assistants Directed

Robert Anderson (2022-present)
Kathryn Barrett (2009-2010)
Richard Bastar, IV (2013)
Theodore Champ, (2019-2020)
Melinda Channel (2008-2011)
Brain Evanko (2012)
Richard "Chip" Fisher (2010-2016)
Oliver Kilbury (2010)
Caitlin Majlinger (2013-2018)
Mark Wallace (2015-2018)
Barbara Ward (2014-2016)
Kimberly Zimmer (2010-2014)

Visiting Foreign Scientists

Sarah von Rooij, 2016 (EPFL, Switzerland)
Matthias Faust, 2013 (Karlsruhe University, Germany)
Carolina Herradon, 2012 (University Rey Juan Carlos, Spain)
Katja Kruit, 2012 (Delft, The Netherlands)
Sandro Hutter, 2012 (ETH Zurich, Switzerland)
Stefan Stroehle, 2011 (ETH Zurich, Switzerland)
Michael Schmidt, 2010 (ETH Zurich, Switzerland)
Aldo Steinfeld, 2010 (ETH Zurich, Switzerland); sabbatical
Teres Felix, 2009 (ETH Zurich, Switzerland)
Michael Wirz, 2009 (ETH Zurich, Switzerland)
Ruud van Ommen, 2009 (Delft, The Netherlands); sabbatical
Kevin Cuche, 2008 (ETH Zurich, Switzerland)
Sophia Haussener, 2007 (ETH Zurich, Switzerland)
David Hirsch, 2006 (ETH Zurich, Switzerland)
Alexander Z'Graggen, 2004 (ETH Zurich, Switzerland)

F. Bruetsch, 2003 (ETH Zurich, Switzerland)

Undergraduate Research Students Supervised
(Independent Study and Sr. Thesis)

Jessica Connell, 2024-present
Will Paulson, 2024-present
William Bierzychudek, 2024-present
Nathan Smith, 2023-present
Michael Zaca, 2023-present
Liam Taylor, 2022 – present
Samantha Harshberger, 2022 – present
Bergen Evans, 2022 – present
Hermann F. Klein-Hessling Barrientos, 2021-present
Hannah Howard, 2020 Summer REU (Georgia Tech)
Osel Carlek, 2020-2022
Carter Wilson, 2020-2022 (Sr. Thesis)
Maddie McGrath, 2020-2022
Elena Napolitano, 2020-present
Tanner Stelmach, 2019-2021
Lindsey Hamblin, 2018-2019
Audrey Linico, 2017- 2019
Peter Buur, 2017-2019 (Sr. Thesis)
Chanel Hill, 2017-2019
Theodore Champ, 2017-2020
Anna Lai, 2017-2020 (Sr. Thesis)
Alexa Horrell, 2017-2020
Iryna Androshchuk, 2017-2020
Sean Chapel, 2017-2018
Laura Nitz, Summer REU (2017); Michigan Technological University
Katharine Hirl, Summer REU (2016); Benedictine College
Aiden Coffee, 2015-present
Benjamin Mousseau, 2015-2016
Maila Kodas, 2015-2018
Megan Maguire, 2015-2018, Sr. Thesis (2015-2016)
Sophia Barrera Cobos, Summer REU (2015); Monterrey Institute of Technology
Daniel Vigil, Summer REU (2015); University of Wisconsin
Mark Wallace, 2014-2015
Kevin Sun, 2014-present
Austin Drake, 2014-2017; summer REU 2015, Sr. Thesis (2015-2016)
Vanessa Witte, 2014-2016
Carla Manzi, 2014
Elizabeth Kezar, Summer REU (2014) and Summer REU (2015); Kansas State University
Anthony Anderson, Summer REU (2014); Arizona State University
Christopher Bartel, Summer REU (2013); Auburn University
Ryan Hollenbaugh, 2013-2014
James Baker, 2013-2014
Jeni Sorli, 2012-2014; Sr. Thesis 2014/2015
Rachel Viger, 2012 – 2014; Sr. Thesis 2013/14
Kayla Weston, 2011-2014; Sr. Thesis 2013/14
Amanda Sagastegui, Summer REU (2011); Princeton University
Jesus Jaime Leal Chapa, Summer REU (2011); Monterrey Inst. of Technol.
Kathryn Geldart, Summer REU (2011); University of Massachusetts
Kelly Anderson, 2011-2013, Sr. Thesis 2013/13
Christopher Wilson, 2011
Anthony Alli, 2011
Will Schwab, 2011

Brittany Jo Michael, 2011
Chris Bohling, 2010-2011
Erica Jorgensen, 2010 –2012 (Sr. Thesis, 2012)
Benjamin Switzer, 2010
Lauren Blinn, Summer REU (2010); University of Florida
Brian Evanko, 2009-2011(Sr. Thesis, 2011)
Amy Oberlin, Summer REU (2009); Univ. of Michigan
Clay Beavers, Summer REU (2009); New Mexico Tech
Alan Azar, Summer REU (2009; 2010); Monterrey Inst. of Technol.
Margarite Parker, 2005, 2008/2009; Sr. Thesis (2009)
Seth Parker, 2008-2009
Melissa Rickman, 2008-2009
Eran Rozewski, 2008-2011
Samantha Johnson, 2007-2011; Sr. Thesis (2011)
Andrew Demars, 2008
Brittany Lancaster, 2007/2008; Sr. Thesis (2008)
Benjamin Chittick, 2008
Freya Kugler, 2007/2008
Ami Patel, 2007/2008
Peter Kreider, 2007-2010; Sr. Thesis (2010)
Oliver Kilbury, 2006 – 2008; Sr. Thesis (2008)
Gevorg Sargsyan, 2006 - 2007
Andrea Francis, 2007 Summer REU, Monterrey Institute of Technology
Amanda Scott, 2007 Summer REU, Vanderbilt University
Henry Diaz, 2006
Paul Lichty, 2005/2006
Margarite, Parker, 2005
Lauren Brickner, 2005/2006
Heather Dunsheath, 2005 Summer REU, Rice University
Alyssa Roessler, Boulder High School Sr. Student
Candace Vaughn, 2005 (Sr. Thesis)
Michael Kerins, 2005
Janna Martinek, 2005
Jeffrey Wyss, 2005
Michele Buzek, 2004
Michele Casper, 2004 Summer REU, Univ. of South Carolina
Jason Mooney, 2004
Eli Paster, 2004
Candace Vaughn, 2004
Jeremy Zartman, 2004
Houston Frost, 2003
Brian Stephens-Hotopp, 2003 (Sr. Thesis)
Brandon Hughes, 2003
Leslie Morgret, 2003 (Sr. Thesis)
Julie Portman, 2003 Summer REU, Univ. Of Missouri
Joseph Spencer, 2003 (Sr. Thesis)
Michele Zeles, 2003
Houston Frost, 2002 (Sr. Thesis)
Brandon Hughes, 2002
Leslie Morgret, 2002
Joseph Spencer, 2002
Jeffrey Weisiger, 2002
Michele Zeles, 2002
Joseph Spencer, 2001
Andy Yoder, Summer REU, Michigan State University
Barr Halevi, 2000
Jacob Johnson, 2000 (Sr. Thesis)

Shane Passon, 2000
David Scott, 2000 (Sr. Thesis)
Josphe Spencer, 2000
Joseph Tamburini, 2000 (Sr. Thesis)
Stephanie Thompson, 2000
Jacob Johnson, 1999
David Scott, 1999
John Lock, 1998 (Sr. Thesis)
John Lock, 1997
Charissa Money, 1997
Brennan Peterson, 1997 (Sr. Thesis)
David Winks, 1997
Brennan Peterson, 1996
Hyun Lee, 1996