Wilson A. Smith

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Education

Ph.D., Physics (*Prof. Yiping Zhao*), Department of Physics and Astronomy/Nanoscale Science and Engineering Center, *University of Georgia*, Athens, GA (USA)
Thesis title, "*Nanophotocatalysts Engineered by Oblique Angle and Glancing Angle Deposition for Water Purification and Water Splitting*"; **May 2010**

B.S., Physics, Department of Computer Science, Audio Technology, and Physics, *American University*, Washington, DC (USA); **May 2005**

Professional Experience

Professor, Department of Chemical and Biological Engineering, University of Colorado at Boulder, Boulder, Colorado, USA (2022 ~ present)

Associate Professor, Department of Chemical and Biological Engineering, University of Colorado at Boulder, Boulder, Colorado, USA (2019 ~ 2022)

Research Scientist V, Chemistry and Nanoscience Center, National Renewable Energy Laboratory (NREL), Golden, Colorado, USA (2019 ~ present)

Associate Professor, Materials for Energy Conversion and Storage, Department of Chemical Engineering, Faculty of Applied Sciences, Delft University of Technology, Delft, The Netherlands (2016 ~ 2023)

Assistant Professor, Materials for Energy Conversion and Storage, Department of Chemical Engineering, Faculty of Applied Sciences, Delft University of Technology, Delft, The Netherlands (2012 ~ 2016)

Postdoctoral Research Associate, (*Prof. Farzaneh Arefi-Khonsari*), Department of Chemical Engineering and Plasma Surface Treatments (Chimie ParisTech), Université Pierre et Marie Curie (Sorbonne Universities - Paris VI), Paris, France (2010 ~ 2012)

Honors/Awards

- **Outstanding Faculty Mentor Award**, University of Colorado Boulder (2022)
- **Provost's Faculty Achievement Award for Tenured-Faculty**, University of Colorado Boulder (2021)
- **Distinguished Member of Research Staff (DMRS)** at NREL (2021)
- **Research Corporation Scialog Fellow for Negative Emissions Science** (2020-2023)
- **ERC Starting Grant** (2017) - Selective conversion of water and CO_2 using interfacial electrochemical engineering
- Elected as an inaugural member of the Advanced Research Center – Chemical Building Blocks Consortium (ARC-CBBC), one of only 39 scientists in all of the Netherlands
- **VIDI award** (2016) – NWO (Dutch National Science Foundation)
- Selected by the Journal of Materials Chemistry A as an "***Emerging Investigator 2016***"
- **Top 30 finalist** for 2014 TEDxAmsterdam Award for the presentation, "Solar Fuels via Artificial Photosynthesis"
- **VENI award** (2013) – NWO (Dutch National Science Foundation)
- **Gold Prize** (1st place) winner in **Young Scientist Lecture Competition** held during the 6th International Conference on Surfaces, Coatings, and Nanostructured Materials (NANOSMAT-6). Krakow, Poland. October 2011
- Selected as a representative of the Oak Ridge Associated Universities (ORAU) to attend the **58th Meeting of Nobel Laureates in Lindau, Germany**, which focused on Physics (2008)
- **Dr. Jacob Kastner Memorial Award** for "Outstanding Senior Physics Student" in the Department of Computer Science, Audio Technology, and Physics, American University, Washington, DC (2005)

Professional Publications (113 peer-reviewed articles, >11,000 citations H-index: 54)

(google scholar: https://scholar.google.com/citations?user=eqrRTrqAAAAJ&hl=en)
#: CU Boulder students/postdocs, ^: TU Delft students/postdocs, $: NREL postdocs

Under review manuscripts

115. S. T. Hamilton, M. Kelly, **W. A. Smith***, A.-H. Park*, *Electrolyte-electrocatalyst interfacial effects of polymer materials for tandem CO_2 capture and conversion elucidated using operando electrochemical AFM*, under review
114. Y. Fishler, A. Holewinski*, **W.A. Smith***, *Layered Sn-Au thin films for increased electrochemical ATR-SEIRAS enhancement*, in revision.

Peer-reviewed Publications

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113. H. M. Almajed, O. J. Guerra, **W.A. Smith**, B.-M. Hodge, A. Somoza-Tornos*, *Evaluating the techno-economic potential of defossilized air-to-syngas pathways*, **Energy and Environmental Science**, **accepted** (2023)
112. H. Simonson, E. W. Klein, D. Henckel, S. Verma, K. C. Neyerlin, **W. A. Smith***, *Direct measurement of electrochemical selectivity gradients over a 25 cm^2 copper gas diffusion electrode*, **ACS Energy Letters**, **8**, 3811~3819 (2023)
111. O.J. Guerra, H. M. Almajed, **W. A. Smith**, A. Somoza-Tornos, B.-M.Hodge*, *Barriers and opportunities for the deployment of CO_2 electrolysis in net-zero emissions energy systems*, **Joule**, **7**, 1111 ~ 1133 (2023)
110. J. Guo, P. Brimley, M. J. Liu, E. R. Corson, C. Munoz, **W.A. Smith**, W.A. Tarpeh*, *Mass transport modifies the interfacial electrolyte to influence electrochemical nitrate reduction*, **ACS Sustainable Chemistry & Engineering**, **11**, 7882 ~ 7893 (2023)
109. D.S. Mallapragada, Y. Dvorkin, M.A. Modestino, D.V. Esposito, **W.A. Smith**, B.-M. Hodge, M.P. Harold, V. M. Donnelly, A. Nuz, C. Bloomquist, K. Baker, L. C. Grabow, Y. Yan, N. N. Rajput, R. L. Hartman, E. J. Biddinger, E. S. Aydil, A. D. Taylor*, *Decarbonization of the chemical industry through electrification: Barriers and opportunities*, **Joule**, **7**, 23 ~ 41 (2023)
108. A. Somoza-Tornos, O.J. Guerra, W.A. Smith, B.-M. Hodge, *Network optimization of the electrosynthesis of chemicals from CO_2*, **Computer Aided Chemical Engineering**, **49**, 733 ~ 738 (2022)
107. M. Sassenburg, M. Kelly, S. Subramanian, **W.A. Smith**, T. Burdyny*, *Zero-gap electrochemical CO_2 reduction cells: Challenges and operational strategies for prevention of salt precipitation*, **ACS Energy Letters**, **8**, 321 ~ 331 (2022)
106. D. Ripepi, B. Izelaar, D.D. Van Noordenne, P. Jungbacker, M. Kolen, P. Karanth, D. Cruz, P. Zeller, V. Perez-Dieste, I. J. Villar-Garcia, **W. A. Smith**, F. M. Mulder*, *In situ study of hydrogen permeable electrodes for electrolytic ammonia synthesis using near ambient pressure XPS*, **ACS Catalysis**, **12**, 13781 ~ 13791 (2022)
105. M. Kolen, G. Antoniadis, H. Schreuders, B. Boshuizen, D. van Noordenne, D. Ripepi, **W. A. Smith**, F. M. Mulder*, *Combinatorial screening of bimetallic electrocatalysts for nitrogen reduction to ammonia using a high-throughput gas diffusion electrode cell design*, **Journal of the Electrochemical Society**, **169**, 124506 (2022)
104. P. Brimley#, H. Almajed#, A. Alherz, Y. Alsunni, Z. Bare, **W.A. Smith**, C. Musgrave*, *Electrochemical CO_2 reduction over metal/nitrogen-doped graphene single atom catalysts modeled using grand-canonical density functional theory*, **ACS Catalysis**, **12**, 10161 ~10171 (2022)
103. M. Sassenburg^, R. de Rooij, N. Nesbitt#, R. Kas#, S. Chandrashekar^, N.J. Firet^, K. Yang^, K. Liu^, M. Blommaert^, M. Kolen^, D. Ripepi^, **W.A. Smith**, T. Burdyny*, *Characterizing CO_2 reduction catalysts on gas diffusion electrodes: Comparing activity, selectivity and stability of transition metal catalysts*, **ACS Applied Energy Materials**, **5**, 5983 ~ 5994 (2022)
102. M. Kolen^, D. Ripepi^, **W.A. Smith**, T. Burdyny, F. Mulder*, *Overcoming nitrogen reduction to ammonia detection challenges: The case for leapfrogging to gas diffusion electrode platforms*, **ACS Catalysis**, **12**, 5726 ~ 5735 (2022)
101. R. Kas#, K. Yang^, G. Yewale, A. Crow#, T. Burdyny, **W.A. Smith***, *Modelling the local environment within porous electrodes during electrochemical reduction of bicarbonate*, **Industrial & Engineering Chemistry Research**, **61**, 10461~10473 (2022)
100. A. Venugopal^, L. Egberts, J. Meeprasert, E. Pidko, B. Dam, T. Burdyny, V. Sinha, **W. A. Smith***, *Polymer modification of surface electronic properties of electrocatalysts*, **ACS Energy Letters**, **7**, 1586 ~ 1593 (2022)

99. A. Badgett*, M. Ruth, A. Crow, G. Grim, Y. Chen, L. Hu, L. Tao, **W.A. Smith**, K.C. Neyerlin, R. Cortright, *An economic analysis of the role of materials, system engineering, and performance in electrochemical carbon dioxide conversion to formate*, **Journal of Cleaner Production**, **351**, 131564 (2022)
98. Y. Chen$, J.A. Wrubel$, A.E. Vise, F. Intia, S. Harshberger, W.E. Klein, **W.A. Smith**, Z. Ma, T.G. Deutsch, K.C. Neyerlin*, *The effect of catholyte and catalyst layer binder on CO_2 reduction selectivity*, **Chem Catalysis**, **2**, 400~421 (2022)
97. M. Blommaert^, S. Subramanian, K. Yang^, **W.A. Smith**, D.A. Vermaas*, *High indirect energy consumption in AEM-based CO_2 electrolyzers demonstrates the potential of bipolar membranes*, **ACS Applied Materials & Interfaces**, **14**, 557~563 (2021)
96. K. Yang^, M. Li, S. Subramanian, M.A. Blommaert^, **W.A. Smith**, T. Burdyny*, *Cation-driven increases of CO_2 utilization in a bipolar membrane electrode assembly for CO_2 electrolysis*, **ACS Energy Letters**, **6**, 4291~4298 (2021)
95. S. Chandrashekar*^, J.C.C. Geerlings, **W.A. Smith***, *Assessing Silver Palladium Alloys for Electrochemical CO2 Reduction in Membrane Electrode Assemblies*, **ChemElectroChem**, **8**, 4515~4521 (2021)
94. A. Venugopal*^, R. Kas#, K. Hau, **W. A. Smith***, *Operando infrared spectroscopy reveals the dynamic nature of semiconductor-electrolyte interface in multinary metal oxide photoelectrodes*, **J. Am. Chem. Soc.**, **143**, 18581~18591 (2021)
93. A. Somoza-Tornes#, O.J. Guerra, A.M. Crow#, **W.A. Smith**, B.-M. Hodge*, *Process modeling, technoeconomic assessment, and life cycle assessment of the electrochemical reduction of CO_2: a review*, **iScience**, **24**, 102813 (2021)
92. M.A. Blommaert^, D. Aili, R.A. Tufa, Q. Li, **W.A. Smith**, D.A. Vermaas*, *Insights and challenges for applying bipolar membranes in advanced electrochemical energy systems*, **ACS Energy Letters**, **6**, 2539~2548 (2021)
91. M.A. Blommaert^, R. Sharifian, N.U. Shah, N.T. Nesbitt, **W.A. Smith**, D.A.Vermaas*, *Orientation of a bipolar membrane determines the dominant ion and carbonic species transport in membrane electrode assemblies for CO_2 reduction*, **Journal of Materials Chemistry A**, **9**, 11179~11186 (2021)
90. N.T. Nesbitt*$ and **W.A. Smith***, *Operando topography and mechanical property mapping of CO_2 reduction gas-diffusion electrodes operating at high current densities*, **Journal of the Electrochemical Society**, **168**, 044505 (2021)
89. N.T. Nesbitt*$ and **W.A. Smith***, *Water and solute activities regulate CO_2 reduction in gas diffusion electrodes*, **Journal of Physical Chemistry C**, **125**, 13085~13095 (2021)
88. M. Kolen^, **W.A. Smith**, F.M. Mulder, *Accelerating ^1H NMR detection of aqueous ammonia*, **ACS Omega**, **6**, 5698~5704 (2021)
87. R. Kas#, A. G. Star$, Kailun Yang^, T. Van Cleve$, K.C. Neyerlin, **W. A. Smith***, *Along the channel gradients impact on the spatioactivity of gas diffusion electrodes at high conversions during CO_2 electroreduction*, **ACS Sustainable Chemistry and Engineering**, **9**, 1286~1296 (2021)
86. K. Yang^, R. Kas#, **W.A. Smith**, T. Burdyny, *Role of the carbon-based gas diffusion layer on flooding in a gas diffusion electrode cell for electrochemical CO_2 reduction*, **ACS Energy Letters**, **6**, 33~40 (2020)
85. N.T. Nesbitt$, T. Burdyny, H. Simonson#, D. Salvatore#, D. Bohra^, R. Kas#, **W. A. Smith***, *Liquid-solid boundaries dominate activity of CO2 reduction on gas-diffusion electrodes*, **ACS Catalysis**, **10**, 14093~14106 (2020)
84. Y. Chen$, J. Wrubel$, E.W. Klein, S. Kabir, **W.A. Smith**, K.C. Neyerlin, T.G. Deutsch, *High-performance bipolar membrane development for improved water dissociation*, **ACS Applied Polymer Materials**, **3**, 5804~5812 (2020)
83. N.J. Firet^, T. Burdyny^, N.T. Nesbitt^, S. Chandrashekar^, A. Longo, **W.A. Smith***, *Copper and silver gas diffusion electrodes performing CO_2 reduction studied through operando X-ray absorption spectroscopy*, **Catalysis Science and Technology**, **10**, 5870~5885 (2020)
82. E.R. Corson, R. Kas^, R. Kostecki, J.J. Urban, **W.A. Smith**, B.D. McCloskey*, R. Kortlever*, *In situ ATR-SEIRAS of carbon dioxide reduction at a plasmonic silver cathode*, **J. Am. Chem. Soc.**, **142**, 11750~11762 (2020)
81. S. Chandrashekar*^, N.T. Nesbitt^, **W.A. Smith***, *Electrochemical CO_2 reduction over bimetallic Au-Sn thin films: Comparing activity and selectivity against morphological, compositional and electronic differences*, **Journal of Physical Chemistry C**, **124**, 14573~14580 (2020)

80. M. Blommaert^, J. Verdonk^, H. Blommaert, **W.A. Smith**, D.A. Vermaas*, *Reduced crossover in bipolar membrane electrolysis via increased current density, molecular size and valence*, **ACS Applied Energy Materials**, **3**, 5804~5812 (2020)
79. J. Vos, A. Venugopal^, **W.A. Smith**, M.T.M. Koper*, *Competition and selectivity during parallel evolution of Bromine, Chlorine and Oxygen on IrOx electrodes*. **Journal of Catalysis**, **389**, 99~110 (2020)
78. Y. Chen$, A. Vise, W.E. Klein, F.C Centibas, D.J. Myers, **W.A. Smith**, T.G. Deutsch, K.C. Neyerlin*, *A robust, scalable platform for the electrochemical conversion of CO_2 to formate: Identifying pathways to higher energy efficiencies*, **ACS Energy Letters**, **5**, 1825~1833 (2020)
77. D. Bae*, G. Kanellos, K. Wedge, E. Drazevic, A. Bentien, **W.A. Smith**, *Hidden figures of photo-charging: A thermo-electrochemical approach for solar-rechargable redox flow cell system*, **Sustainable Energy & Fuels**, **4**, 2650~2655 (2020)
76. G. De Gregorio, T. Burdyny^, A. Loiudice, P. Iyengar, **W.A. Smith**, R. Buonsanti*, *Facet-dependent selectivity of Cu catalysts in electrochemical CO_2 reduction at commercially viable current densities*, **ACS Catalysis**, **10**, 4854~4862 (2020)
75. D. Bae*^, G. Kanellos, K. Wedge, E. Drazevic, A. Bentien, **W.A. Smith***, *Tailored energy level alignment at MoO_x/GaP interface for solar-driven redox battery applications*, **Journal of Chemical Physics**, **152**, 124710 (2020)
74. D. Bae*^, G. Kanellos, R. Faasse, E. Drazevic, A. Venugopal^, **W.A. Smith***, *Design principles for efficient photoelectrodes in solar rechargeable redox flow cell applications*, **Communications Materials**, **1**, 1 (2020)
73. J. Vos, A. Venugopal^, **W.A. Smith**, M.T.M. Koper*, *Competition and interhalogen formation during parallel electrocatalytic oxidation of bromide and chloride on Pt*, **Journal of the Electrochemical Society**, **167**, 046505 (2020)
72. R. Kas^, K. Yang^, D. Bohra^, R. Kortlever, T. Burdyny, **W.A. Smith***, *Electrochemical CO_2 reduction on nanostructured metal electrodes: fact or defect?*, **Chemical Science**, **11**, 1738~1749 (2020)
71. D. Bohra^, J. H. Chaudhry, T. Burdyny^, E.A. Pidko, **W.A. Smith***, *Modeling the electrical double layer to understand the reaction environment in a CO_2 electrocatalytic system*, **Energy and Environmental Science**, **12**, 1442~1453 (2019)
70. K. Yang^, R. Kas^, **W.A. Smith***, *In situ infrared spectroscopy reveals persistent alkalinity near electrode surfaces during CO_2 electroreduction*, **J. Am. Chem. Soc.**, **141**, 15891~15900 (2019)
69. R. Kas^, O. Ayemoba, N.J. Firet^, **W.A. Smith**, A. Cuesta Ciscar, *In-situ infrared spectroscopy applied to the study of the electrocatalytic reduction of CO_2: Theory, practice and challenges*, **ChemPhysChem**, **20**, 2904~2925 (2019)
68. M. Blommaert^, D.A. Vermaas,^ B. Izelaar^, B. in 't Veen, **W.A. Smith***, *Electrochemical impedance spectroscopy as a performance indicator of water dissociation in bipolar membranes*, **Journal of Materials Chemistry A**, **7**, 19060~19069 (2019)
67. N.J. Firet^, A. Venugopal^, M.A. Blommaert^, C. Cavallari, C. Sahle, A. Longo, **W.A. Smith***, *Chemisorption of anionic species from the electrolyte alters the surface electronic structure and composition of photocharged $BiVO_4$*, **Chemistry of Materials**, **31**, 7453~7462 (2019)
66. D. Bae^, R. Faasse^, G. Kanellos^, **W.A. Smith***, *Unravelling the practical solar charging performance limits of redox flow battery based on the single photon device*, **Sustainable Energy and Fuels**, **3**, 2399~2408 (2019)
65. **W.A. Smith***, T. Burdyny^, D.A. Vermaas, J.C.C. Geerlings, *Pathways to industrial-scale fuel out of thin air from CO_2 electrolysis*, **Joule**, **3**, 1822~1834 (2019)
64. K. Liu^, M. Ma^, L. Wu, M. Valenti^, D. Cardenas-Morcoso, J.P. Hofmann, J. Bisquert, S. Gimenez, **W.A. Smith***, *Electronic effects determine the selectivity of planar Au-Cu bimetallic thin films for electrochemical CO_2 reduction* **ACS Applied Materials & Interfaces**, **11**, 16546~16555 (2019)
63. M. Valenti^, N.P. Prasad^, R. Kas^, D. Bohra^, M. Ma^, V. Bulasubramanian, L. Chu, S. Gimenez, J. Bisquert, B. Dam, **W.A. Smith***, *Supressing H_2 evolution and promoting selective CO_2 electroreduction to CO at low overpotentials by alloying Au with Pd*, **ACS Catalysis**, **9**, 3527~3536 (2019)
62. K. Liu^, **W. A. Smith**, T. Burdyny, *An introductory guide to assembling and operating gas diffusion electrodes for electrochemical CO_2 reduction*, **ACS Energy Letters**, **4**, 639~643 (2019)

61. W. Zhang, M. Ma^, M. Huijbers, G.A. Filonenko, E.A. Pidko, M. van Schie, S. de Boer, B.O. Burek, J. Bloh, W.J.H. van Berkel, **W.A. Smith**, F. Hollmann, *Hydrocarbon synthesis via photoenzymatic decarboxylation of carboxylic acids*, **J. Am. Chem. Soc.**, **141**, 3116~3120 (2019)
60. N.J. Firet^, M.A. Blommaert^, T. Burdyny^, A. Venugopal^, D. Bohra^, A. Longo, **W.A. Smith***, *Operando EXAFS study reveals presence of oxygen in oxide-derived catalysts for electrochemical CO_2 reduction*, **Journal of Materials Chemistry A**, **7**, 2597~2607 (2019)
59. T. Burdyny^ and **W.A. Smith***, *CO_2 reduction on gas-diffusion electrodes and why catalytic performance must be assessed at commercially relevant conditions*, **Energy and Environmental Science**, **12**, 1442~1453 (2019) (**HOT article, Front Cover**)
58. A. Venugopal^ and **W.A. Smith***, *Light induced formation of a surface heterojunction in photocharged $CuWO_4$ photoanodes*, **Faraday Discussions**, **215**, 175~191 (2019)
57. D. Bohra^, I. Ledezma-Yanez^, G. Li, W. de Jong, E.A. Pidko, **W.A. Smith***, *Lateral adsorbate interactions inhibit $HCOO^-$ while promoting CO selectivity for CO_2 electrocatalysis on Ag*, **Angewandte Chemie International Edition**, **58**, 1345~1349 (2019) (**Highly Important Paper, Back Cover**)
56. K. Wedge, D. Bae^, A. Mendes, **W.A. Smith**, A. Bentien, *Solar redox flow batteries with organic redox couples in aqueous electrolytes: a mini-review*, **Journal of Physical Chemistry C**, **122**, 25729~25740 (2018)
55. S. Ardo, D. Fernandez Rivas, M. A. Modestino, V. S. Greiving, F.A. Abdi, E. Alarcon-Llado, V. Artero, K.E. Ayers, C. Battaglia, J.-P. Becker, D. Bederak, A. Berger, F. Buda, E. Chinello, B. Dam, V. Di Palma, T. Edvinsson, K. Fujii, H.J.G.E. Gardeniers, H. Geerlings, S. Mohammad, H. Hashemi, S. Haussener, F.A. Houle, J. Huskens, B. James, K. Konrad, A. Kudo, P.P. Kunturu, D. Lohse, B. Mei, E. Miller, G. Moore, J. Muller, K.L. Orchard, T. Rosser, F.H. Saadi, J.-W. Schuttauf, B.J. Seger, S.W. Sheehan, **W.A. Smith**, J. Spurgeon, M. Tang, R. van de Krol, P.C.K. Vesborg and P. Westerik, *Pathways to electrochemical solar-hydrogen technologies*, **Energy and Environmental Science**, **11**, 2768~2783 (2018) (**HOT article**)
54. D.A. Vermaas^, S. Wiegman^, T. Nagaki^, **W.A. Smith***, *Ion transport mechanisms in bipolar membranes for (photo)electrochemical water splitting*, **Sustainable Energy and Fuels**, **2**, 2006-2015 (2018) (***special invited issue: Artificial Photosynthesis – from sunlight to fuels and valuable products for a sustainable future***) (**HOT article**)
53. M. Ma^, K. Liu^, J. Shen, R. Kas^, **W.A. Smith***, *In-situ fabrication and reactivation of highly selective and stable Ag catalysts for electrochemical CO_2 conversion*, **ACS Energy Letters**, **3**, 1301~1306 (2018)
52. N. T. Nesbitt^, M. Ma^, B.J. Trzesniewski^, S. Jaszewski, F. Tafti, M.J. Burns, **W.A. Smith***, M.J. Naughton, *Au dendrite electrocatalysts for CO_2 reduction*, **J. Phys. Chem. C**, **122**, 10006~10016 (2018)
51. P. Perez-Rodriguez^, D. Cardenas-Morcoso, I.A. Digdaya^, A. Mangel Raventos, P. Procel, O. Isabella, S. Gimenez, M. Zeman, **W.A. Smith**, A.H.M. Smets, *Improving the back surface field on an amorphous silicon carbide thin-film photocathode for solar water splitting*, **ChemSusChem**, **11**, 1797~1804 (2018)
50. I.A. Digdaya^, B.J. Trzesniewski^, G. Adhyaksa, E. Garnett and **W.A. Smith***, *General considerations for improving photovoltage in metal-insulator-semiconductor photoanodes*, **J. Phys. Chem. C**, **122**, 5462~5471 (2018)
49. B. Lamm, B.J. Trzesniewski^, H. Doescher, **W.A. Smith*** and M. Stefik*, *Emerging post-synthetic improvements of BiVO4 photoanodes for solar water splitting*, **ACS Energy Letters**, **3**, 112~124 (2018)
48. M. Ma^, H. Hansen, M. Valenti^, Z. Wang, A. Cao, M. Dong and **W.A. Smith***, *Electrochemical CO_2 reduction on compositionally variant Au-Pt thin films*, **Nano Energy**, **42**, 51~57 (2017)
47. I.A. Digdaya^, G. Adhyaksa, B.J. Trzesniewski^, E. Garnett and **W.A. Smith***, *Interfacial engineering of metal-insulator-semiconductor junctions for efficient and stable photoelectrochemical water oxidation*, **Nature Communications**, **8**, 15968 (2017)
46. B.J. Trzesniewski^, I.A. Digdaya^, I. Herraiz-Cardona, S. Ravishankar, T. Nagaki^, D. A. Vermaas, A. Longo, S. Gimenez and **W.A. Smith***, *Near complete suppression of surface losses and total internal quantum efficiency in $BiVO_4$ photoanodes*, **Energy and Environmental Science**, **10**, 1517~1529 (2017)
45. P. Perez-Rodriguez^, Y. Bennani, M. Zeman, **W.A. Smith**, M. Alani, L. Rietveld, A.H.M. Smets, *Treatment of Organic Pollutants Using a Solar Energy Driven Photo-oxidation Device*, **Advanced Sustainable Systems**, **1**, 1700010 (2017)
44. M. Valenti^, A. Venugopal^, D. Tordera, M. Jonsson, G. Biskos, A. Schmidt-Ott, **W.A. Smith***, *Hot carrier generation and extraction of plasmonic alloy nanoparticles*, **ACS Photonics**, **4**, 1146~1152, **Front Cover** (2017)
43. N.J Firet^ and **W.A. Smith***, *Probing the reaction mechanism of CO_2 electroreduction over Ag films via operando infrared spectroscopy*, **ACS Catalysis**, **7**, 606~612 (2017)

42. D.A. Vermaas^ and **W.A. Smith***, *Synergistic electrochemical CO_2 reduction and water oxidation with a bipolar membrane*, **ACS Energy Letters**, **1**, 1143~1148 (2016)
41. M. Valenti^, M.P. Jonsson, G. Biskos, A. Schmidtt-Ott and **W. A. Smith***, *Plasmonic nanoparticle-semiconductor composites for efficient solar water splitting*, **Journal of Materials Chemistry A**, **4**, 17891~17912 (2016)
40. Y. Bennani, P. Perez-Rodriguez^, M. J. Alani, **W.A. Smith**, L.C. Rietveld, M. Zeman, A. H. M. Smets, *Photoelectrocatalytic oxidation of phenol for water treatment using a $BiVO_4$ thin-film photoanode*, **Journal of Materials Research**, **31**, 2627~2639 (2016)
39. F. Sastre, M.J. Munoz-Batista, A. Kubacka, M. Fernandez-Garcia, **W.A. Smith**, F. Kapteijn, M. Makkee, J. Gascon, *Efficient electrochemical production of syngas from CO_2 and H_2O using a nano-structured Ag/g-C_3N_4 catalyst*, **ChemElectroChem**, **3**, 1497~1502 (2016)
38. M. Ma^, B.J. Trzesniewski^, J. Xie, **W.A. Smith***, *Selective and Efficient Reduction of CO_2 to CO on Oxide-Derived Nanostructured Ag Electrocatalysts*, **Angewandte Chemie Int. Ed.**, **55**, 9748~9752 (2016)
37. S. Emin, M. de Respinis^, T. Mavric, B. Dam, M. Valant, **W.A. Smith***, *Photoelectrochemical water splitting with porous Fe2O3 thin films prepared from Fe/Fe-oxide nanoparticles*, **Applied Catalysis A: General**, **523**, 130~138 (2016)
36. M. Ma^, K. Djanashvili, **W.A. Smith***, *Controllable hydrocarbon formation via electrochemical reduction of CO_2*, **Angewandte Chemie Int. Ed.**, **55**, 6680~6684 (2016)
35. M. Valenti^, E. Kontoleta^, I.A. Digdaya^, M. Jonssen, G. Biskos, A. Schmidt-Ott, **W.A. Smith***, *The role of size and dimerization of decorating plasmonic silver nanoparticles on the photoelectrochemical solar water splitting performance of $BiVO_4$ photoanodes*, **ChemNanoMat**, **2**, 739~747 (2016) (***special invited issue: Nanomaterials for energy conversion and storage***)
34. J. Luo, D.A. Vermaas^, D. Bi, A. Hagfeldt, **W.A. Smith***, M. Gratzel, *Bipolar membrane assisted solar water splitting in optimal pH*, **Advanced Energy Materials**, **6**, 1600100 (2016)
33. I.A. Digdaya^, P. Perez Rodriguez^, G. Adhyaksa, E. C. Garnett, A.H.M. Smets, **W.A. Smith***, *Engineering the kinetic and interfacial energetics of Ni/Ni-Mo catalyzed amorphous silicon carbide photocathodes in alkaline media*, **Journal of Materials Chemistry A**, **4**, 6842~6852 (2016) (***special invited issue: Emerging Investigators 2016***)
32. R. Vasudevan, L. Han, T. Buijs, H. Tan, D. Deligiannis, P. Perez Rodriguez^, I.A. Digdaya^, **W. A. Smith**, M. Zeman, A. H. M. Smets, *A thin-film silicon/silicon hetero-junction hybrid solar cell for photoelectrochemical water-reduction applications*, **Solar Energy Materials and Solar Cells**, **150**, 82~87 (2016)
31. B.J. Trzesniewski^ and **W.A. Smith***, *Photocharged $BiVO_4$ photoanodes for improved solar water splitting*, **Journal of Materials Chemistry A**, **4**, 2919~2926 (2016) (***special invited issue: Water Splitting and Photocatalysis***)
30. B.J. Trzesniewski^, O. Diaz-Morales, D.A. Vermaas^, A. Longo, W. Bras, M.T.M. Koper, **W.A. Smith***, *In-situ observation of active oxygen species in Fe-containing Ni-based oxygen evolution catalysts: the effect of pH on electrochemical activity*, **Journal of the American Chemical Society**, **137**, 15112~15121 (2015)
29. M. de Respinis^, M. Fravventura, F. F. Abdi, H. Schreuders, T. Savenije, **W.A. Smith**, B. Dam, R. van de Krol, *Oxynitrogenography: the controlled synthesis of single phase tantalum oxynitride photoabsorbers*, **Chemistry of Materials**, **27**, 7091~7099 (2015).
28. **W.A. Smith***, I.D. Sharp, N.C. Strandwitz, J. Bisquert, *Interfacial band-edge energetics for solar fuels production*, **Energy and Environmental Science**, **8**, 2851~2862 **Front cover** (2015). (***special invited issue: Status of Photoelectrochemical Water Splitting: Past, Present, and Future***)
27. D.A. Vermaas^, M. Sassenburg^ and **W.A. Smith***, *Photo-assisted water splitting with bipolar membrane induced pH gradients for practical solar fuel devices*, **Journal of Materials Chemistry A**, **3**, 19556~19562 (2015).
26. N. Kumar, F.F. Abdi, B.J. Trzesniewski^, **W.A. Smith**, P.C.M. Planken, A.J.L. Adam, *Investigation of terahertz emission from $BiVO_4$/Au thin film interface*, **Journal of Infrared, Millimeter, and Terahertz Waves**, **36**, 1~10 (2015)
25. M. Ma^, K. Djanashvili, **W.A. Smith***, *Selective electrochemical reduction of CO_2 to CO on CuO-derived Cu nanowires*, **Physical Chemistry Chemical Physics**, **17**, 20861~20867 (2015)
24. M. Valenti^, D. Dolat^, G. Biskos, A. Schmidt-Ott, **W.A. Smith***, *Enhancement of the photoelectrochemical performance of $CuWO_4$ thin films for solar water splitting by plasmonic nanoparticle functionalization*, **Journal of Physical Chemistry C**, **119**, 2096~2104 (2015)

23. I.A. Digdaya^, L. Han, T.W.F. Buijs, M. Zeman, B. Dam, A.H.M. Smets, **W.A. Smith**,* *Extracting large photovoltages from a-SiC photocathodes with an amorphous TiO_2 front surface field layer for solar hydrogen evolution*, **Energy and Environmental Science**, **8**, 1585~1593 (2015)
22. L. Han, I.A. Digdaya^, T.W.F. Buijs, F. F. Abdi, Z.Q. Huang, R. Liu, B. Dam, M. Zeman, **W.A. Smith***, A.H.M. Smets, *Gradient dopant profiling and spectral utilization of monolithic thin-film silicon photoelectrochemical tandem devices for solar water splitting*, **Journal of Materials Chemistry A**, **3**, 4155~4162 (2015) (**Back cover**)
21. D. Bohra^ and **W.A. Smith***, *Improved charge separation via Fe-doping of copper tungstate photoanodes*, **Physical Chemistry Chemical Physics**, **17**, 9857~9866 (2015)
20. C.M. Caskey, J.A. Seabold, V. Stevanovic, M. Ma^, **W.A. Smith**, D.S. Ginley, N.R. Neale, R.M. Richards, S. Lany, A. Zakutayev, *Semiconducting properties of spinel tin nitride and other IV3N4 polymorphs*, **Journal of Materials Chemistry C**, **3**, 1389~1396 (2015)
19. M. de Respinis^, K.S. Joya, H.J.M. De Groot, F. D'Souza, **W.A. Smith**, B. Dam, R. van de Krol, *Solar water splitting combining a $BiVO_4$ light absorber with a Ru-based molecular cocatalyst*, **Journal of Physical Chemistry C**, **119**, 7275~7281 (2015)
18. S. Emin, M. de Respinis^, M. Fanetti, **W. Smith**, M. Valant, B. Dam, *A simple route for preparation of textured WO_3 thin films from colloidal W nanoparticles and their photoelectrochemical water splitting properties*, **Applied Catalysis B: Environmental**, **166~167**, 406~412 (2015)
17. S. Emin, F.F. Abdi, M. Fanetti, W. Peng, **W. Smith**, K. Sivula, B. Dam, M. Valant, *A novel approach for the preparation of textured CuO thin films from electrodeposited CuCl and CuBr*, **Journal of Electroanalytical Chemistry**, **717**, 243~249 (2014)

Postdoctoral Work

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16. M. Baker, H. Fakhouri, R. Grilli, **W. Smith**, J. Pulpytel, F. Arefi-Khonsari, *Control of the Nitrogen Doping State in Dual Gas RF Sputtered TiO_2 Thin Films*, **Thin Solid Films**, **552**, 10~17 (2014)
15. H. Fakhouri, **W. Smith**, J. Pulpytel, A. Zolfaghati, H. Mortaheb, F. Meshikini, R. Jafari, F. Arefi-Khonsari, *Visible Light Water Splitting and Enhanced UV Photocatalysis from Nitrogen Doped TiO_2 Thin Films*, **Applied Catalysis B- Environmental**, **144**, 12~21 (2014)
14. **W. Smith***, H. Fakhouri, S. Mori J. Pulpytel, F. Arefi-Khonsari, *Oxidation Kinetics of TiN Films Deposited by RF Reactive Sputtering at High and Low Pressure*, **Journal of Physical Chemistry C, 116**, 15855~15866 (2012)
13. **W. Smith***, H. Fakhouri, J. Pulpytel, F. Arefi-Khonsari, *Control of the Optical and Crystalline Properties of TiO_2 in Photoactive TiO_2/TiN Bi-layer Thin Film Stacks*, **Journal of Applied Physics**, **111**, 024301 (2012)
12. G. Chen, M. Zhou, C. Zhang, G. Lv, S. Massey, **W. Smith**, M. Tatoulian, *Coating Polymers of Acrylic Acid on Silk Fibers by a Room Temperature APGD Plasma Jet*, **Plasma Processes and Polymers**, **8**, 701~708 (2011)
11. H. Fakhouri, **W. Smith**, J. Pulpytel, F. Arefi-Khonsari, H. Mortaheb, A. Zolfaghati, *Enhancement of NMP Degradation Under UV Light by Nitrogen-doped TiO_2 Thin Films: Effect of Morphology and Substituted Nitrogen Using a Design of Experiment*, **Journal of Nano- and Electronic Physics**, **112**, 712~715 (2011)

Ph.D. Work

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10. **W. Smith***, A. Wolcott, R. Fitzmorris, J. Zhang, Y.-P. Zhao, *Quasi-Core-Shell TiO_2-WO_3 Nanorod Arrays For Visible Light Induced Photoelectrochemical Water Splitting*, **Journal of Materials Chemistry**, **21**, 10792~10800 (2011)
9. **W. Smith***, S. Mao, G. Lu, A. Catlett, J.H. Chen, Y.-P. Zhao, *The Effect of Ag Nanoparticle Loading on the Photocatalytic Activity of TiO_2 Nanorod Arrays*, **Chemical Physics Letters**, **485**, 171~175 (2010)
8. **W. Smith***, W. Ingram, Y.-P. Zhao, *The Scaling of the Photocatalytic Decay Rate with the Length of Aligned TiO_2 Nanorod Arrays*, **Chemical Physics Letters**, **479**, 270~273 (2010)
7. **W. Smith*** and Y.-P. Zhao, *Superior Photocatalytic Performance by Vertically Aligned Core-Shell TiO_2/WO_3 Nanorod Arrays*, **Catalysis Communications**, **10**, 1117 (2010)

6. A. Wolcott, **W. A. Smith**, Y.-P. Zhao, and J. Z. Zhang, *Photoelectrochemical Study of Nanostructured ZnO Thin Films for Hydrogen Generation from Water Splitting*, **Advanced Functional Materials**, **19**, 1~8 (2009)
5. A. Wolcott, **W. A. Smith**, T. R.. Kuykendall, Y.-P. Zhao, and J. Z. Zhang, *Photoelectrochemical Water Splitting Using Dense and Aligned TiO_2 Nanorod Arrays*, **Small**, **5**, 104 (2009)
4. R. Sharma, J.P. Mondia, J. Schäfer, **W. Smith**, S.-H. Li, Y.-P. Zhao, Z.H. Lu, and L.J. Wang, *Measuring the Optical Properties of a Trapped ZnO Tetrapod*, **Microelectronics Journal**, **40**, 520-522 (2009)
3. **W. Smith*** and Y.-P. Zhao, *Enhanced Photocatalytic Activity by Aligned WO_3/TiO_2 Two-Layer Nanorod Array*, **Journal of Physical Chemistry C**, **112**, 19635 (2008)
2. J. P. Mondia, R. Sharma, J. Schäfer, **W. Smith**, Y. P. Zhao, Z. H. Lu, and L. J. Wang, *An Electrodynamically Confined Single ZnO Tetrapod Laser*, **Applied Physics Letters**, **93**, 121102 (2008)
1. **W. Smith***, Z.-Y. Zhang, and Y.-P. Zhao, *Structural and Optical Characterization of WO_3 Nanorods/Films Prepared by Oblique Angle Deposition*, **Journal of Vacuum Science and Technology B**, **25**, 1875~1881 (2007)

Conference Proceedings

1. **W. Smith** and Y. Zhao, *Hetero-Structured Nano-Photocatalysts Fabricated by Dynamic Shadowing Growth*, Proc. SPIE 7770, 777018 (2010)

Book Chapters

4. M. Goldman, E.W. Lees, P.L. Prieto, B.A.W. Mowbray, D.M. Weekes, A. Reyes, T. Li, D.A. Salvatore, **W.A. Smith**, C.P. Berlinguette, Electrochemical Reactors, *Carbon Dioxide Electrochemistry: Homogeneous and Heterogeneous Catalysis*, ed. M. Robert, C. Costentin, K. Daasbjerg, Royal Society of Chemistry (2021)
3. D.A. Vermaas and **W.A. Smith**, Applications of bipolar membranes for electrochemical and photoelectrochemical applications, *Advances in Photoelectrochemical Water Splitting*, ed. S. David Tilley, S. Lany, R. van de Krol, Royal Society of Chemistry (2018)
2. M. Ma and **W.A. Smith**, Nanostructured Catalysts for the Electrochemical Reduction of CO_2, *Advanced Nanostructured Systems and Their Applications*, ed. Simona Murph, Springer (2017)
1. **W.A. Smith**, Photoelectrochemical Cell Design, Efficiency, Definitions, Standards, and Protocols, *Photoelectrochemical Solar Fuel Production*, ed. Juan Bisquert and Sixto Gimenez, Springer, 163~197 (2016)

Patents

4. N.T. Nesbitt and **W.A. Smith**, *Electrochemical cells and methods for direct air capture*, PROV/21-57 (2022)
3. **W. Smith** and Y.-P. Zhao, *Photocatalytic Structures, Methods of Making Photocatalytic Structures, and Methods of Photocatalysis*, US Patent 8,975,205 (2015).
2. D.A. Vermaas and **W.A. Smith**, *Bipolar membrane electrode assembly for fuel generation*, WO2016153341-A1 (2016)
1. B. Dam, M. de Respinis, and **W.A. Smith**, *Intermittent solar energy conversion system for generating electrical energy, has electrolyzer for selecting one of battery charging mode, and electrolyzing mode in dependence of solar light received by photovoltaic cell*, WO2017142411-A1 (2017)

Invited Presentations

42. **W. A. Smith**, *Operando characterization of materials and chemistry during CO_2 electrolysis*, nanoGE CO2cat Conference, June 9, 2020 (virtual)
41. **W. A. Smith**, *Chemisorption of anionic species from the electrolyte alter the surface electronic structure and composition of photocharged $BiVO_4$*, 29th International Conference on Photochemistry, Boulder, CO, July 25, 2019
40. **W.A. Smith**, *Electrochemical CO_2 reduction across scales: From mechanistic pathways to practical applications*, EPFL Seminar, Sion, Switzerland, April 11, 2019
39. **W.A. Smith**, *Electrochemical CO_2 reduction across scales: From mechanistic pathways to practical applications*, Fysika 2019, Amsterdam, The Netherlands, April 5, 2019

38. **W.A. Smith**, *Electrochemical CO_2 reduction across scales: From mechanistic pathways to practical applications*, University of Twente Soft Matter Series Colloquium, Enschede, The Netherlands, March 21, 2019
37. **W.A. Smith**, *Enhancing electrocatalytic CO_2 reduction using a system-integrated approach to catalyst discovery/optimization*, RASEI Big Energy Series Seminar, Boulder, Colorado, October 18, 2018
36. **W.A. Smith**, *Enhancing electrocatalytic CO_2 reduction using a system-integrated approach to catalyst discovery/optimization*, Colorado School of Mines Chemical Engineering Seminar, Golden, Colorado, October 17, 2018
35. **W.A. Smith**, *Enhancing electrocatalytic CO_2 reduction using a system-integrated approach to catalyst discovery/optimization*, National Renewable Energy Lab (NREL) Seminar, Golden, Colorado, October 15, 2018
35. **W.A. Smith**, *Enhancing electrocatalytic CO_2 reduction using a system-integrated approach to catalyst discovery/optimization*, DIFFER Seminar, Eindhoven, The Netherlands, October 11, 2018
34. **W.A. Smith**, *Enhancing electrocatalytic CO_2 reduction using a system-integrated approach to catalyst discovery/optimization*, Redox Shields Workshop, Marseille, France, September 11, 2018
33. **W.A. Smith**, *Enhancing electrocatalytic CO_2 reduction using a system-integrated approach to catalyst discovery/optimization*, SurfCat Summer School, Kysthusnse, Denmark, August 9, 2018
32. **W.A. Smith**, *Electrochemical Engineering: Towards the Rational Design of Materials and Systems for the Conversion and Storage of Renewable Energy*, (**Keynote Lecture**)– RESOLV annual meeting, Bochum, Germany, March 15, 2018
31. **W.A. Smith**, *Electrochemical Engineering: Towards the Rational Design of Materials and Systems for the Conversion and Storage of Renewable Energy*, (**Keynote Lecture**) Netherlands Conference on Catalysis and Chemistry (NCCC) XIX, Noordwijkerhout, The Netherlands, March 5, 2018
30. **W.A. Smith**, *Electrochemical Engineering: Towards the Rational Design of Materials and Systems for the Conversion and Storage of Renewable Energy*, e-Refinery National Symposium Delft, The Netherlands, December 18, 2017
29. **W.A. Smith**, *Electrochemical Engineering: Towards the Rational Design of Materials and Systems for the Conversion and Storage of Renewable Energy*, KAUST Catalysis Center Seminar, Thuwal, Saudi Arabia, October 19, 2017
28. **W.A. Smith**, *Electrochemical Engineering: Towards the Rational Design of Materials and Systems for the Conversion and Storage of Renewable Energy*, Shell Long Range Research Academy Seminar, Amsterdam, The Netherlands, May 3, 2017
27. **W.A. Smith,** *Electrochemical Engineering: Towards the Rational Design of Materials and Systems for the Conversion and Storage of Renewable Energy*, EPFL Chemistry Seminar, Lausanne, Switzerland, April 10, 2017
26. **W.A. Smith**, *Global Progress on Renewable Hydrogen Generation*, IEA-HIA Executive Committee Meeting. Oslo, Norway, February 15, 2017
25. **W.A. Smith**, *Towards the stable and selective production of solar fuels via electrochemical engineering*, TU Eindhoven Chemical Engineering Colloquium, Eindhoven, NL September 2016
24. **W.A. Smith**, *Considerations of Electrode/Electrolyte Compatibility for Practical Solar Fuel Devices*, nanoGE Solar Fuels 2016 Conference, Berlin, Germany September 2016
23. **W.A. Smith**, *Considerations of Electrode/Electrolyte Compatibility for Practical Solar Fuel Devices*, CINF/DTU Summer School, Kysthusnse, Denmark August 2016
22. **W.A. Smith**, *Considerations of Electrode/Electrolyte Compatibility for Practical Solar Fuel Devices*, Utrecht University Chemistry Colloquium, Utrecht, NL June 2016
21. **W.A. Smith**, *Considerations of Electrode/Electrolyte Compatibility for Practical Solar Fuel Devices*, DIFFER Seminar, Eindhoven, NL April 2016
20. **W.A. Smith**, *Considerations of Electrode/Electrolyte Compatibility for Practical Solar Fuel Devices*, MCEC Symposium on Solar Fuels, Eindhoven, NL April 2016
19. **W.A. Smith**, *Considerations of Electrode/Electrolyte Compatibility for Practical Solar Fuel Devices*, Spring 2016 MRS Meeting, Phoenix, AZ (USA) April 2016
18. **W.A. Smith**, *Considerations of Electrode/Electrolyte Compatibility for Practical Solar Fuel Devices*, FOM Physics 2016, Veldhoven, NL January 2016
17. **W.A. Smith**, *Towards the Development of a Cheap, Stable and Efficient Solar Fuels Device*, Boston College Physics Department Seminar, Boston, MA (USA) December 2015
16. **W.A. Smith**, *Considerations of Electrode/Electrolyte Compatibility for Practical Solar Fuel Devices*, Fall 2015 MRS Meeting, Boston, MA (USA) December 2015
15. **W.A. Smith**, *Towards the Development of a Cheap, Stable and Efficient Solar Fuels Device*, Universite Catholique Louvain, Leuven, Belgium, October 2015

14. **W.A. Smith**, *Considerations of Electrode/Electrolyte Compatibility for Practical Solar Fuel Devices*, SOFI Virtual Seminar, September 2015
13. **W.A. Smith**, *Fundamentals and Applications of Photoelectrochemistry*, Summer School Seminar, Leiden University, Leiden, The Netherlands, June 2015
12. **W.A. Smith**, *Silicon Based Devices for Cheap, Efficient, and Practical Production of Solar Fuels*, MCARE Conference, South Korea, February 2015
11. **W.A. Smith**, *Tandem PV/PEC Devices for Solar Fuel Production*, CHAINS (Chemistry As Innovating Science) 2014, Veldhoven, The Netherlands, November 2014
10. **W.A. Smith**, *Silicon Based Devices for Cheap, Efficient, and Practical Production of Solar Fuels*, (**Keynote Lecture**) NPS-14, Utrecht, The Netherlands, November 2014
9.v**W.A. Smith**, *Silicon Based Devices for Cheap, Efficient, and Practical Production of Solar Fuels*, SUNGreen Workshop, Slovenia, July 2014
8. **W.A. Smith**, *The International Energy Agency's Hydrogen Implementation Agreement, Task 26: Photoelectrochemical Water Splitting*, The Royal Society of Chemistry, Buckinghamshire, UK, June 2014
7.**W.A. Smith**, *Tandem PV/PEC Devices for Solar Fuel Production*, University of Georgia Nanoscale Science and Engineering Center Colloquium, USA, May 2014
6.**W.A. Smith**, *Solar Fuels for a Sustainable Future*, Stanford University Department of Materials Science and Engineering, USA, April 2014
5.**W.A. Smith**, *Solar Fuels for a Sustainable Future*, Fusion Conference: Materials and Molecules for Artificial Photosynthesis, Cancun, Mexico February 2014
4. **W.A. Smith**, *Solar Fuels for a Sustainable Future*, NWO Division of Chemical Sciences, The Hague, The Netherlands, January 2014
3. **W.A. Smith**, *Solar Fuels for a Sustainable Future*, AMOLF Institute, Amsterdam, The Netherlands, January 2014
2. **W.A. Smith**, *Nanophotocatalysts Engineered by Glancing Angle Deposition*, Department of Chemistry, Boston College, USA March 2010
1. **W.A. Smith**, A. Wolcott, T.R. Kuykendall, J.-Z. Zhang, Y.-P. Zhao, *Photoelectrochemical Cells For Direct Hydrogen Production from Sunlight Utilizing GLAD Nanostructures*, 2009 Electrical Power Conference, Chicago, IL., USA May 2009

Student supervision

Current (@ CU Boulder/NREL)

PhD

1.) Allison Crow (year 5), *Electrochemical conversion of CO_2 capture media*
2.) Hunter Simonson (year 5), *Spatial diagnostics of electrochemical CO reduction cells*
3.) Yuval Fishler (year 5), *Operando spectroelectrochemical characterization of metal catalysts*
4.) Paige Brimley (year 5), *Mass transport considerations in electrochemical systems*
5.) Maria Kelly (year 4), *Operando scanning electrochemical microscopy*
6.) Hussain Almajed (year 3), *Process engineering approaches to the integration of direct air capture and CO_2 conversion*
7.) Jesus Melendez-Gil (year 2), *Operando spectroelectrochemical characterization of polymer/catalyst interfaces for CO2R and HER*
8.) Jason Pfeilsticker (year 2), *Operando spectroelectrochemistry of reactive capture solutions for CO2R*
9.) Rebecca Beswick (year 1), Segmented cell diagonstics for advanced electrolysis

Former Postdocs

1.) Dr. David A. Vermaas (now Associate Professor, Department of Chemical Engineering, TU Delft), *Bipolar membranes for enhanced solar to fuel devices*
2.) Dr. Tom Burdyny, (now Assistant Professor, Department of Chemical Engineering, TU Delft) *Systems design for electrochemical CO_2 reduction*
3.) Dr. Dowon Bae (now tenure-track Assistant Professor at Herriot-Watt University), *Flow cells for photoelectrochemical water splitting*

4.) Dr. Nathan Nesbitt, (now Manager at Battolyser) *In-situ electrochemical characterization of metal surfaces during CO_2 reduction*
5.) Dr. Ana Somoza-Tornos, (now Assistant Professor, Department of Chemical Engineering, TU Delft) *Process systems integration of electrochemical and thermochemical systems*
6.) Dr. Yaran Zhao, (now Assistant Professor, Beijing Normal University, China) *Operando spectroelectrochemical characterization and analysis*
7.) Dr. Recep Kas, (now Staff Scientist at NREL), *Operando spectroelectrochemical characterization of metal surfaces during CO_2 reduction*

Graduated PhD Students

1.) Ming Ma (graduated Fall 2017, now postdoctoral researcher at Denmark Technical University (DTU)), *Nanostructured electrocatalysts for enhanced activity, selectivity and stability of the CO_2 reduction reaction*
2.) Marco Valenti (graduated June 2018, now postdoctoral researcher at AMOLF), *Spark-discharge as a nanoparticle source to study size-dependent plasmonic properties for photoelectrochemical water splitting*
3.) Bartek J. Trzesniewski (graduated June 2018, now senior research scientist at ASML), *Electrochemical activation of photo- and electrochemical water oxidation catalysts*
4.) Ibadillah A. Digdaya (graduated November 2018), *Defect engineering of oxide interfaces: Extracting large photovoltages from Si photoelectrodes*
5.) Nienke J. Firet (graduated June 2020), *In-situ spectroelectrochemical studies of electrocatalysts surface during CO_2 reduction*
6.) Divya Bohra (graduated January 2021), *Modeling the carbon dioxide electrocatalysis system*
7.) Marijn Blommaert (graduated August 2021), *Bipolar membranes for water splitting and CO_2 reduction*
8.) Kailun Yang (graduated March 2022), *Understanding the influence of side reactions during electrochemical CO_2 reduction*
9.) Sanjana Chandrashekar (graduated October 2022), *Alloy catalysts for electrochemical CO_2 reduction*
10.) Kai Liu (graduated January 2023), Structure functionality relationships in metal alloy electrocatalysts
11.) Davide Ripepi (graduated March 2023), Electrochemical production of ammonia
12.) Martin Kolen (graduated March 2023), Electrochemical production of ammonia
13.) Anirudh Venugopal (graduated April 2023), In-situ observations of the semiconductor-liquid junction
14.) Mark Sassenberg (graduated October 2023), *Mitigating ionic cross-over in gas diffusion electrodes for electrochemical CO_2 reduction*

Masters theses supervised: >25
Bachelor theses supervised: >35

Teaching courses

CU Boulder

1. ***Energy Fundamentals (Bachelors)*** (2020~present) Course organizer and instructor
2. ***Chemical Thermodynamics (Bachelors)*** (2020) Course organizer and instructor

TU Delft

3. ***Electrochemistry: Applications (Masters)*** (2017~2019) Course organizer and instructor
4. ***Applied Physics Honours Journal Club*** (2016~2019) Course organizer and instructor
5. ***Environmental Physics (Masters)*** (2015~2019) Course organizer and instructor
6. ***Chemical Thermodynamics (Bachelors)*** (2012~2019) Course organizer and instructor
7. ***Chemistry of Solar Cells (Bachelors/Masters)*** (2012~2019) Guest lecturer
8. ***Science of the Hydrogen Economy (Bachelors)*** (2012~2014) Course organizer and instructor
9. ***Introduction to Laboratory Research for Undergraduates (Bachelors)*** (2012~2019) Instructor

Service

- Inclusive Culture Council, College of Engineering and Applied Science, CU Boulder 2021~2024

- Postdoctoral Mentorship Program, Mentor, NREL 2020 ~ present
- Mentor, Cientifico Latino, 2020 ~ present

Other academic activities

- Editorial Board, Scientific Reports, 2018~present
- Guest Editor for special issue of Journal of Chemical Physics, "Special Issue on Photocatalysis and Photoelectrochemistry", **154**, (2021)
- Guest Editor for special issue of iScience, "Emerging pathways to electrochemical synthesis", **24**, 102639 (2021)
- Guest Editor for special issue of Catalysis Today, "Electrochemical and photochemical water oxidation", **290**, 1~78 (2017)
- Guest Editor for special issue of Chemical Engineering Science, "Recent Advances in Energy Storage and Conversion Devices", **154**, 1~170 (2016)
- Conference organizer of NanoGE SolarFuels17 conference in Barcelona, Spain (2017)
- Member of CHAINS (Dutch national chemistry conference) programme committee (2019)
- Member of ECCM tenure-track committee (2018-2019)
- Member of Masters Education Board of Studies, Department of Chemical Engineering, TU Delft (2014~2018)
- Member of Faculty Search Committee, Department of Chemical Engineering, TU Delft (2014~2018)
- Member of University Strategic Advisory Board, TU Delft (2017)
- Member of NIOK (Netherlands Institute for Catalysis Research) Educational Committee (2014~2020)
- Referee for International Journals including: Science, Nature, Nature Materials, Nature Catalysis, Nature Communications, Energy and Environmental Science, J. Am. Chem. Soc., ACS Catalysis, Angewandte Chemie International Edition, Journal of Materials Chemistry A, Journal of Physical Chemistry C, etc.

Professional Organizations

- Materials Research Society (MRS)
- International Society of Electrochemistry (ISE)
- Netherlands Royal Society of Chemistry (KNCV)
- Dutch Society of Catalysis (NIOK)
- Advanced Research Center – Chemical Building Blocks (ARC-CBBC)

International activities

- Lead Operating Agent for International Energy Agency Hydrogen Implementing Agreement (IEA-HIA) Task 35 – Renewable Hydrogen (2014 ~ 2018)
- Member of US Department of Energy Working Group on Photoelectrochemistry (2012~2018)
- Member of Solar Fuels Institute (SOFI) (2014~2018)
- Symposium Organizer for 2015 Spring e-MRS Conference. Lille, France (2015)
- Symposium Organizer, 68th Annual Meeting of the ISE, Aug. 21~26, 2016, The Hague, The Netherlands (2016)
- Hosted/Organized International Photoelectrochemistry Discussion Meeting Delft (2014)
- Organized, planned and hosted 2014 Dutch BioSolar Cell Summer School
- Reviewer for US Department of Energy (DOE) Proposals (2014~2019)
- Invited external PhD committee member for the group of Prof. dr. Ib Chorkendorff (Denmark Technical University) 2015/2019, Prof. dr. Marc Koper (Leiden University) 2016/2018/2022, Prof. Michael Gratzel (EPFL) 2017, dr. Jan Philipp Hofmann 2019

*Funding Awarded (>$10,000,000 total, *denotes industrial partnerships)*

At CU Boulder and NREL

18. *(Co-PI) Electrochemical Production of Formic Acid from Carbon Dioxide in Solid Electrolytes, DOE-BETO (2021-2024) $3M for 3 years

17. *(Co-PI) An efficient, scalable process for the electrochemical reduction of CO_2 to formate, DOE-BETO (2021-2024) $4.2M for 3 years
16. (PI) Liquid Sunlight Alliance (LiSA), DOE Solar Fuels Hub (2020-2025) $355,000/year for 5 years
15. *(PI) Shell-NREL partnership (2020-2023) $1,500,000 total for 3 years
14. (Co-PI) Scialog Fellowship from Research Corporation for Scientific Advancement (Sloan Foundation) (2020-2021) $50,000

At Delft University of Technology

13. (PI) Selective conversion of water and CO_2 using interfacial electrochemical engineering (WU TANG), ERC Starting Grant (2017), €2,000,000
12. *(Co-PI) Electrochemical CO_2 Conversion: Elucidating the Role of Catalyst, Support and Electrolyte, €1,500,000, ARC-CBBC/Shell (2017) (PI share ~€500,000)
11. *(Co-PI) Electrochemical Synthesis of Ammonia, €750,000, NWO/TTW/Nuon/Shell (2017)
10. *(PI) Towards the Development of a Practical Device to Produce Renewable Hydrogen in Industrially Relevant Conditions, €35,000, Toyota Motor Europe (2017)
9. (PI) Nanomaterials for Solar Energy, €90,000, NanoNextNL (2016)
8. *(PI) An Integrated Device to Convert Sunlight, CO_2, and Water to Syngas, €900,000, NWO/Shell, (2016)
7. (PI) Light. Catalyst. ACTION!, €800,000, VIDI - NWO, (2016)
6. (Co-PI) Conceptual design of an industrial scale artificial leaf device, €50,000, Towards BioSolarCells, (2016)
5. (PI) In-situ high resolution X-ray study of $BiVO_4$ photoanodes for integrated solar water splitting devices, €5,000, ESRF Synchrotron source (DUBBLE beam) (2015)
4. (PI) In-situ high resolution X-ray study of oxygen evolution catalysts for integrated solar fuel devices, €5,000, ESRF Synchrotron source (DUBBLE beam) (2014)
3. *(Co-PI) Monolithic photovoltaic-photoelectrochemical devices based on earth abundant materials, €750,000, FOM/NWO/Shell (2014)
2. (PI) Solar fuel generation via photoelectrochemical water splitting over copper based photoelectrodes, €250,000, VENI - NWO, (2013)
1. (PI) Defect engineering of ultra-thin photoelectrodes for solar water splitting, €750,000, FOM/Towards BioSolar Cells (2012)