

David J. Michaelis

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Education

University of Wisconsin–Madison 7/2005–12/2009
Pre-doctoral studies, Organic Division, Department of Chemistry
Brigham Young University 1999–2000, 2002–2005
B.S., *cum laude*, Chemistry, GPA 3.86/4.0; Minor: Humanities

Work Experience

Assistant Professor of Chemistry 2013–2019
Department of Chemistry and Biochemistry, Brigham Young University, Provo, UT
Associate Professor of Chemistry 4/2019–present
Department of Chemistry and Biochemistry, Brigham Young University, Provo, UT

Research Experience

Post-doctoral assistant in organic synthesis with Prof. Barry M. Trost 2010–2013
Stanford University, Palo Alto, California
– Developed an asymmetric allylic alkylations of ester-enolate equivalents
– Completed the total synthesis of Peloruside A analogue

Research assistant in organic synthesis with Prof. Tehshik P. Yoon 2005–2009
University of Wisconsin–Madison, Madison, Wisconsin
– Developed a copper(II)-catalyzed aminohydroxylation of olefins
– Developed an asymmetric variant of the aminohydroxylation of olefins

Intern in medicinal chemistry with Dr. Thomas A. Dineen Summer 2008
Medicinal Chemistry Division, Amgen, Cambridge, Massachusetts
– Developed an aziridine-opening reaction with ortho-halophenyl lithium reagents

Research assistant in organic synthesis with Prof. Paul B. Savage 2003–2005
Brigham Young University, Provo, Utah
– Constructed a surface-bound fluorescent chemosensor selective for cadmium ions
– Developed a new method for analyzing reaction progress via ToF-SIMS analysis of TLC plates in collaboration with Prof. D. Matthew Linford

Intern in organic synthesis with Dr. Reed Izatt 2004–2005
IBC Advanced Technologies, Inc., American Fork, Utah
– Synthesized fluorescent chemosensors for selective detection of target metal ions

Research assistant in library sciences with Randall K. Ward 2002–2003
Brigham Young University, Harold B. Lee Library, Provo, Utah
– Surveyed university/college libraries about strategies to address rising costs of scientific journals

Teaching Experience

Chemistry 552: Advanced Physical Organic Chemistry. Instructor F14, F15, F16
Chemistry 553: Advanced Synthetic Organic Chemistry. Instructor W21, W22, W23, W24
Chemistry 455: Spectrosc. Anal. of Org. Compds. Lab instructor F18, F19, F20, F21, F22, F23
Chemistry 352: Organic Chemistry II. Instructor Su13, W18, W19, F21
Chemistry 351: Organic Chemistry I. Instructor W15, W17, F19, F20, F22, F23
Chemistry 659R: Organometallic Chemistry. Instructor W14, W16, W18, W20

Awards and Honors

Visiting Scholar – Max Plank Institute for Kohlenforschung (Ritter Group)	03–08/2022
Earl Woolley Innovation Award (BYU)	2017–2018, 2021–2022
NIH Kirstein NRSA Postdoctoral Fellowship (Stanford)	2010–2013
Reaxys PhD Prize - Runner up/attendant at EuCheMS Chemistry Congress (Wisconsin)	2010
ACS Division of Organic Chemistry (DOC) Fellowship (Wisconsin)	2008–2009
Farrington Daniels Ethical Leadership Fellowship (Wisconsin) <i>Presented for outstanding performance and leadership in the chemistry department</i>	2009
Undergraduate Research Mentor Award (Wisconsin)	2009
Charles & Martha Casey Excellence in Organic Research Award (Wisconsin) <i>Presented to one student in each division for outstanding research progress</i>	2009
Sigma-Aldrich Graduate Student Innovation Award	2008
Graduate Student–Faculty Liaison Committee Divisional Representative (Wisconsin) <i>Served as elected co-chair, 2008–2009</i>	2007–2009
National Institute of Health Pre-doctoral Fellowship (Wisconsin) <i>Chemistry–Biology Interface Training Program</i>	2006–2008
Office of Research and Creative Activities Mentoring Grant (BYU two time recipient) <i>Competitive undergraduate research award for original research proposal</i>	2003, 2005
Garth L. Lee Undergraduate Teaching Award (BYU) <i>Given in recognition of excellent instructional work as a teaching assistant in chemistry</i>	2004
Department of Chemistry Undergraduate Research Award (BYU, three semesters)	2003–2004

Publications

Independent Publications as PI:

- 56) Schill, A. L.; Martinez, E. E.; Larson, A. J. S.; Richardson, E. L.; Parkman, J. A.; Forson, K. G.; Pettit, S. K. F.; Smith, S. J.; Michaelis, D. J. Synthesis and Reactivity of Monometallic and Bimetallic 2-Phosphinoimidazole Complexes of Platinum. *Organometallics*, **2023**, submitted.
- 55) Larson, A. J. S.; Pettit, S. K. F.; Owens, R. N.; Cole, R. J.; Odogwu, D. A.; Chartrand, C. C.; Harper, A. P.; Brown, L. M.; Michaelis, D. J. Using Common Alcohols to Transform N-H NHC-Palladium Complexes into Reactive Catalysts for the Suzuki-Miyaura Reaction with Aryl Chlorides. *J. Org. Chem.* **2023**, Submitted.
- 54) Rodriguez Moreno, M.; Johnson, N. C.; Stewart, C. B.; Setelin, M. L.; Wayment, A. X.; Felix, B. M.; Burt, S. R.; Michaelis, D. J. Solid-Phase Peptide Synthesis and 2D NMR Analysis of Unknown Tripeptides - an Advanced Undergraduate Synthesis and Spectroscopy Laboratory. *J. Chem. Ed.* **2024**, submitted.
- 53) Ludlow, D. J. H.; Palmer, B. W. H.; Green, N. K.; Ho, S.-H. E.; Wayment, C. Z.; Kelleher, B. M.; Barlow, C. D.; Rollans, O. N.; Hunter, B. P.; Rader, C.; Lutz, M. J.; Manwaring, T.; Smith, S. J.; Michaelis, D. J.; Johnson, J. A. Intense THz Generation with New Organic NLO Crystal NMBA. **2023**, *Adv. Opt. Mater.* **2023**, accepted.

- 52) Holland, K. M.; Alejandro, A.; Ludlow, D. J. H.; Petersen, P. K.; Wright, M. A.; Chartrand, C. C.; Michaelis, D. J.; Johnson, J. A.; Patterson, J. E. Characterization of organic crystals for second-harmonic generation. *Optics Letters* **2023**, *48*, 5855–5858.
- 51) Larson, A. J. S.; Cartwright, M. M.; Jones, W. D.; Luce, K.; Chen, M.-Y.; Petersen, K.; Nelson, S. V.; Michaelis, D. J.; Madsen, M. D. Slow Release of GA₃ Hormone from Polymer Coating Overcomes Seed Dormancy and Improves Germination. *Plants* **2023**, *12*, 4139.
- 50) Forson, K. G.; Owens, R. N.; Parkman, J. A.; Bohman, B. O.; Wayment, C. Z.; McKnight, C. E.; Davis, R. C.; Stillwell, L. R.; Smith, S. J.; Michaelis, D. J. Allene Trifluoroacetylation with a 2-Phosphinoimidazole-Derived Bimetallic Rh(II) Catalyst. *ACS Catal.* **2023**, *13*, 12458–12463.
- 49) Parkman, J. A.; Barlow, C. D.; Sheppert, A. P.; Jacobsen, S.; Barksdale, C. A.; Wayment, A. X.; Newton, M. P.; Burt, S. R.; Michaelis, D. J. Structural Analysis of Non-Native Peptide-Based Catalysts using 2D NMR-Guided MD Simulations. *J. Phys. Chem. A* **2023**, *127*, 5602–5608.
- 48) Rader, C.; Nielson, M. F.; Knighton, B. E.; Zaccardi, Z. B.; Michaelis, D. J.; Johnson, J. A. Custom terahertz waveforms using complementary organic nonlinear optical crystals. *Optics Letters* **2022**, *47*, 5985–5988.
- 47) Palmer, B. W. H.; Rader, C.; Ho, E. S.-H.; Zaccardi, Z. B.; Ludlow, D. J.; Green, N. K.; Lutz, M. J.; Alejandro, A.; Nielson, M. F.; Valdivia-Berroeta, G. A.; Chartrand, C. C.; Holland, K. M.; Smith, S. J.; Johnson, J. A.; Michaelis, D. J. Large Crystal Growth and THz Generation Properties of 2-Amino-5-Nitrotoluene (MNA). *ACS Appl. Electron. Mater.* **2022**, *4*, 4316–4321.
- 46) Wayment, A. X.; Rodriguez Moreno, M.; Jones, C. J.; Smith, G. J.; Jarman, P.; Garcia Morin, N. J.; Coombs, M. J.; Parkman, J. A.; Barlow, C. D.; Allington Smith, S.; Burt, S. R.; Michaelis, D. J. Optimizing the Local Chemical Environment on a Bifunctional Helical Peptide Scaffold Enables Enhanced Enantioselectivity and Cooperative Catalysis. *Org. Lett.* **2022**, *24*, 2983–2988.
- 45) Tiempos-Flores, N.; Hernández-Fernández, E.; Rico-Barragan, A.; Álvarez, J. R.; Juárez-Ramírez, I.; Garza-Navarro, M. A.; Rodríguez-Hernández, J.; Fonseca-García, A.; Michaelis, D. J.; Dávila-Guzmán, N. E. Enhanced hydrophobicity of modified ZIF-71 metal-organic framework for biofuel Purification. *Polyhedron* **2022**, *217*, 115736
- 44) Valdivia-Berroeta, G. A.; Zaccardi, Z. B.; Pettit, S. K. F.; Ho, S. H.; Palmer, B. W.; Lutz, M. J.; Rader, C.; Hunter, B. P.; Green, N. K.; Barlow, C.; Wayment, C. Z.; Harmon, D. J.; Petersen, P.; Smith, S. J.; Michaelis, D. J.; Johnson, J. A. Data Mining for Terahertz Generation Crystals. *Adv. Mater.* **2021**, *34*, 2107900.
- 43) Forson, K. G.; Bohman, B. O.; Wayment, C. Z.; Owens, R. N.; McKnight, C. E.; Davis, R. C.; Stillwell, L. R.; Smith, S. J.; Michaelis, D. J. Medium and Large N-Heterocycle Formation via Allene Hydroamination with a Bimetallic Rh(I) Catalyst. *J. Am. Chem. Soc.* **2022**, *144*, 63–68 (later retracted due to product miss-assignment).
- 42) Zaccardi, Z. B.; Tangen, I. C.; Valdivia-Berroeta, G. A.; Bahr, C. B.; Kenney, K. C.; Rader, C.; Lutz, M. J.; Hunter, B. P.; Michaelis, D. J.; Johnson, J. A. Enabling high-power, broadband THz generation with 800-nm pump wavelength. *Optics Express* **2021**, *29*, 38084–38094.

- 41) Tangen, I. C.; Valdivia-Berroeta, G. A.; Heki, L. K.; Zaccardi, Z. B.; Jackson, E. W.; Bahr, C. B.; Michaelis, D. J.; Johnson, J. A. Comprehensive characterization of terahertz generation with the organic crystal BNA. *J. Opt. Soc. Am. B* **2021**, *38*, 2780-2785.
- 40) Parkman, J. A.; Barksdale, C. A.; Michaelis, D. J. CAN: A new program to streamline preparation of molecular coordinate files for molecular dynamics simulations. *J. Comp. Chem.* **2021**, *42*, 2031–2035.
- 39) Nava-Ramírez, J. C.; Santana-Krímskaya, S. E.; Franco-Molina, M. A.; Ortega-Villarreal, A. S.; López, I.; Michaelis, D. J.; Hernández-Fernández, E.; Synthesis of α , β -Unsaturated Benzotriazolyl-1,3,4-Oxadiazole Derivatives: Anticancer Activity, Cytotoxicity, and Cell Imaging. *IEEE Transactions on Nanobioscience*, **2021**, *21*, 125–134.
- 38) Valdivia-Berroeta, G. A.; Tangen, I. C.; Bahr, C. B.; Kenney, K. C.; Jackson, E. W.; DeLagange, J.; Michaelis, D. J.; Johnson, J. A. Crystal Growth, Tetrahertz Generation, and Optical Characterization of EHPSI-4NBS. *J. Phys. Chem. C* **2021**, *125*, 16097–16102.
- 37) Valdivia-Berroeta, G. A.; Kenney, K. C.; Jackson, E. W.; Zaccardi, Z.; Tangen, I. C.; Bahr, C. B.; Ho, S.-H.; Rader, C.; Smith, S. J.; Michaelis, D. J.; Johnson, J. A. Terahertz generation of two methoxy stilbazolium crystals: MBST and MBSC. *Opt. Mat.* **2021**, *117*, 111119.
- 36) Davis, J. T.; Martinez, E. E.; Clark, K. J.; Kwon, D.-H.; Talley, M. R.; Michaelis, D. J.; Ess, D. H.; Asplund, M. C.; Time-Resolved Ultraviolet–Infrared Experiments Suggest Fe–Cu Dinuclear Arene Borylation Catalyst Can Be Photoactivated. *Organometallics* **2021**, *40*, 1859-1865.
- 35) Martinez, E. E.; Larson, A. J. S.; Fuller, S. K.; Petersen, K. M.; Smith, S. J.; Michaelis, D. J. 2-Phosphinoimidazole Ligands: N–H NHC or P–N Coordination Complexes in Palladium-Catalyzed Suzuki–Miyaura Reactions of Aryl Chlorides. *Organometallics* **2021**, *40*, 1560–1564.
- 34) Martinez, E. E.; Rodriguez Moreno, M.; Barksdale, C. A.; Michaelis, D. J. Effect of Precatalyst Oxidation State in C–N Cross-Couplings with 2-Phosphinoimidazole-Derived Bimetallic Pd(I) and Pd(II) Complexes. *Organometallics* **2021**, *40*, 2763–2767.
- 33) Hernández-Fernández, E.; Ortega-Villarreal, A. S.; García-López, M. C.; Chan-Navarro, R.; Garrard, S.; Valdivia-Berroeta, G. A.; Smith, S. J.; Christensen, K. A.; Michaelis, D. J. Synthesis and characterization of benzotriazolyl acrylonitrile analogs-based donor-acceptor molecules: Optical properties, in vitro cytotoxicity, and cellular imaging. *Dye Pigment*. **2021**, *189*, 109251.
- 32) Ence, C. C.; Martinez, E. E.; Himes, S. R.; Nazari, S. H.; Rodriguez Moreno, M.; Matu, M. F.; Larsen, S. G.; Gassaway, K. J.; Valdivia-Berroeta, G. A.; Smith, S. J.; Ess, D. H.; Michaelis, D. J. Experiment and Theory of Bimetallic Pd-Catalyzed α -Arylation and Annulation for Naphthalene Synthesis. *ACS Catal.* **2021**, *11*, 10394–10404.
- 31) Martinez, E. E.; Jensen, C. A.; Larson, A. J. S.; Kenney, K. C.; Clark, K. J.; Nazari, S. H.; Valdivia-Berroeta, G. A.; Smith, S. J.; Ess, D. H.; Michaelis, D. J.; Monosubstituted, Anionic (Imidazolyl) N-Heterocyclic Carbene Complexes of Palladium and Their Activity in Cross-Coupling Reactions. *Adv. Synth. Catal.* **2020**, *362*, 2876–2881.
- 30) Valdivia-Berroeta, G. A.; Kenney, K. C.; Jackson, E. W.; Bloxham, J. C.; Wayment, A. X.; Brock, D. J.; Smith, S. J.; Johnson, J. A.; Michaelis, D. J. 6MNEP: a molecular cation with large

- hyperpolarizability and promise for nonlinear optical applications. *J. Mater. Chem. C*, **2020**, *Advance Article*.
- 29) Bahr, C. B.; Green, N. K.; Heki, L. K.; McMurray, E.; Tangen, I. C.; Valdivia-Berroeta, G. A.; Jackson, E. W.; Michaelis, D. J.; Johnson, J. A. Heterogeneous layered structures for improved terahertz generation. *Opt. Lett.* **2020**, *45*, 2054–2057.
 - 28) Asay, S.; Graham, A.; Hollingsworth, S.; Barnes, B.; Oblad, R.; Michaelis, D. J.; Kenealey, J. “ γ -tocotrienol and α -tocopherol ether acetate enhance docetaxel activity in drug-resistant prostate cancer cells. *Molecules* **2020**, *25*, 398.
 - 27) Nazari, S. H.; Forson, K. G.; Martinez, E. E.; Hansen, N. J.; Gassaway, K. J.; Lyons, N. M.; Kenney, K. C.; Valdivia-Berroeta, G. A.; Smith, S. J.; Michaelis, D. J. “Boron-Templated Dimerization of Allylic Alcohols To Form Protected 1,3-Diols via Acid Catalysis.” *Org. Lett.* **2019**, *21*, 9589–9593.
 - 26) Valdivia-Berroeta, G. A.; Jackson, E. W.; Kenney, K. C.; Wayment, A. X.; Tangen, I. C.; Bahr, C. B.; Smith, S. J.; Michaelis, D. J.; Johnson, J. A. “Designing Non - Centrosymmetric Molecular Crystals: Optimal Packing May Be Just One Carbon Away.” *Adv. Funct. Mat.* **2020**, *30*, 1904786.
 - 25) Ence, C.; Walker, W. K.; Martinez, E.; Stokes, R. W.; Sarager, S.; Smith, S. J.; Michaelis, D. J. “Synthesis of chiral titanium-containing phosphinoamide ligands for enantioselective heterobimetallic catalysis.” *Tetrahedron*, **2019**, *75*, 3341–3347. Tetrahedron Young Investigator Award 2019, A Special Issue in Honor of Professor Ryan Shenvi.
 - 24) Mohl, G.; Liddle, N.; Nygaard, J.; Dorius, A.; Lyons, N.; Hodek, J. Weber, J.; Michaelis, D. J.; Busath, D. D. “Novel Influenza Inhibitors Designed to Target PBI Interactions with Host Importin RanBP5.” *Antiviral Res.* **2019**, *164*, 81–90.
 - 23) Valdivia-Berroeta, G. A.; Hekia, L. K.; Jackson, E. W.; Tangen, I. C.; Bahr, C. B.; Smith, S. J.; Michaelis, d. J.; Johnson, J. A. “Terahertz generation and optical characteristics of (E)-2-(4-(dimethylamino)styryl)-1,1,3-trimethyl-1H-benzo[e]indol-3-ium iodide (P-BI).” *Opt. Lett.* **2019**, *44*, 4279–4282.
 - 22) Nazari, S. H.; Tiempos-Flores, N.; Forson, K. G.; Bourdeau, J. E.; Michaelis, D. J. “C–N Bond Formation from Allylic Alcohols Via Cooperative Nickel and Titanium Catalysis.” *J. Org. Chem.* **2018**, *83*, 10646–10654.
 - 21) Valdivia-Berroeta, G. A.; Heki, L. K.; McMurray, E. A.; Foote, L. A.; Nazari, H. S.; Serafin, L.; Smith, S. J.; Michaelis, D. J.; Johnson, J. A. “Alkynyl Pyridinium Crystals for THz Generation.” *Adv. Opt. Mater.* **2018**, *6*, 1800383.
 - 20) Nazari, S. H.; Bourdeau, J. E.; Talley, M. R.; Valdivia-Berroeta, G. A.; Smith, S. J.; Michaelis, D. J. “Nickel-Catalyzed Suzuki Cross Couplings with Unprotected Allylic Alcohols Enabled by Bidentate NHC/Phosphine Ligands.” *ACS Catal.* **2018**, *8*, 86–89.
 - 19) Kinghorn, M. J.; Valdivia-Berroeta, G. A.; Chantry, D. R.; Smith, M. S.; Ence, C. C.; Draper, S. R. E.; Duval, J. S.; Masino, B. M.; Cahoon, S. B.; Flansburg, R. R.; Conder, C. J.; Price, J. L.; Michaelis, D. J. “Proximity-Induced Reactivity and Selectivity with a Rationally Designed Bifunctional Helical Peptide Catalyst.” *ACS Catal.* **2017**, *7*, 7704–7708.
 - 18) Tyler, J. H.; Patterson, R. H.; Nazari, S. H.; Udumula, V.; Smith, S. J.; Michaelis, D. J. Synthesis of N-Aryl “Hydroxylamines via Stalled Nitro Reductions with Soluble Ruthenium Nanoparticle Catalysts.” *Tetrahedron Lett.* **2017**, *58*, 82–86.
 - 17) Talley, M. R.; Stokes, R. W.; Walker, W. K.; Michaelis, D. J. “Electrophilic Activation of Alkynes for Enyne Cycloisomerization Reactions with In Situ Generated Early/Late Heterobimetallic Pt–Ti Catalysts.” *Dalton Trans.* **2016**, *45*, 9770–9773.
 - 16) Udumula, V.; Nazari, S. H.; Burt, S. R.; Alfindie, M. N.; Michaelis, D. J. “Chemo- and Site-Selective Alkyl and Aryl Azide Reductions with Heterogeneous Nanoparticle Catalysts.” *ACS Catal.* **2016**, *6*, 4423–4427.
 - 15) Udumula, V.; Tyler, J. H.; Davis, D. A.; Wang, H.; Linford, M. R.; Minson, P. S.; Michaelis, D. J. “A Dual Optimization Approach to Bimetallic Nanoparticle Catalysis: Impact of M1:M2 Ratio and Supporting Polymer Structure on Reactivity.” *ACS Catal.* **2015**, *5*, 3457–3462.

- 14) Walker, W. K.; Kay, B. M.; Michaelis, S. A.; Anderson, D. L.; Smith, S. J.; Ess, D. H.; Michaelis, D. J. "Origin of Fast Catalysis in Allylic Amination Reactions Catalyzed by Pd–Ti Heterobimetallic complexes." *J. Am. Chem. Soc.* **2015**, *137*, 7371–7378.
- 13) Walker, W. K.; Anderson, D. L.; Stokes, R. W.; Smith, S. L.; Michaelis, D. J. "Allylic Aminations with Hindered Secondary Amine Nucleophiles Catalyzed by Heterobimetallic Ti–Pd Complexes." *Org. Lett.* **2015**, *17*, 752–755.

Publications from Graduate and Postdoc Career

- 12) Williamson, K. S.; Michaelis, D. J.; Yoon, T. P. "Advances in the Chemistry of Oxaziridines." *Chem. Rev.* **2014**, *114*, 8016–8036.
- 11) Trost, B. M.; Michaelis, D. J.; Malhotra, S. "Total Synthesis of (–)-18-epi-peloruside A: An Alkyne Linchpin Strategy." *Org. Lett.* **2013**, *15*, 5274–5277.
- 10) Trost, B. M.; Michaelis, D. J.; Truica, M. "Dinuclear Zinc–ProPhenol-Catalyzed Enantioselective α -Hydroxyacetate Aldol Reaction with Activated Ester Equivalents." *Org. Lett.* **2013**, *15*, 4516–4519.
- 9) Trost, B. M.; Michaelis, D. J.; Charpentier, J.; Xu, J. "Palladium-catalyzed asymmetric allylic alkylation of carboxylic acid derivatives: *N*-acyloxazolinones as ester enolate equivalents." *Angew. Chem., Int. Ed.* **2012**, *54*, 204–208.
- 8) Trost, B. M.; Lehr, K.; Michaelis, D. J.; Xu, J.; Buckl, A. K. "Palladium-catalyzed asymmetric allylic alkylation of 2-acylimidazoles as ester enolate equivalents." *J. Am. Chem. Soc.* **2010**, *132*, 8915–8917.
- 7) Michaelis, D. J.; Williamson, K. S.; Yoon, T. P. "Oxaziridine-mediated enantioselective aminohydroxylation of styrenes catalyzed by copper(II) bis(oxazoline) complexes." *Tetrahedron* **2009**, *65*, 5118–5124, invited symposium in print. PMID: 20161136 [PubMed]
- 6) Michaelis, D. J.; Dineen, T. "Ring-opening of aziridines with *o*-halophenyllithium reagents: synthesis of 2-substituted chiral indolines." *Tetrahedron Lett.* **2009**, *50*, 1920–1923.
- 5) Michaelis, D. J.; Ischay, M. A.; Yoon, T. P. "Activation of *N*-sulfonyl oxaziridines using copper(II) catalysts: aminohydroxylations of styrenes and 1,3-dienes." *J. Am. Chem. Soc.* **2008**, *130*, 6610–6615.
- 4) Michaelis, D. J.; Shaffer, C. J.; Yoon, T. P. "Copper(II)-catalyzed aminohydroxylation of olefins." *J. Am. Chem. Soc.* **2007**, *129*, 1866–1867.
- 3) Parent, A. A.; Anderson, T. M.; Michaelis, D. J.; Jiang, G.; Savage, P. B.; Linford, M. R. "Direct ToF-SIMS analysis of organic halides and amines on TLC plates." *Applied Surface Science* **2006**, *252*, 6746–6749.
- 2) Bronson, R. T.; Michaelis, D. J.; Lamb, R. D.; Husseini, G. A.; Farnsworth, P. B.; Linford, M. R.; Izatt, R. M.; Bradshaw, J. S.; Savage, P. B. "Construction of a surface bound metal ion sensor for Cadmium." *Org. Lett.* **2005**, *7*, 1105–1108.
- 1) Ward, R. K.; Michaelis, D. J.; Murdoch, R.; Roberts, B.; Blixrud. "Widespread academic efforts address the scholarly communication crisis." *J. C&RL News* **2003**, *64*(4), 382–383.

Provisional Patents Filed:

Title: Development and Use of a Slow-Release Polymer Seed Coating System to Deliver Growth Hormones for Enhancing Seed Germination and Early Plant Growth. Alex Larson, David Michaelis, Matthew Madsen, March, 2022.

Title: Amino acid ester and salt for improving metabolic, cognitive, and muscle function. Benjamin Bikman, David Michaelis, David Thompson. June, 2018

Title: The use of medium-chain fatty acid or amino acid ester to improve physical and cognitive health. Benjamin Bikman, David Michaelis, David Thompson. May, 2018.

Title: Novel Influenza Chemotherapeutics: Nuclear Import Inhibitors of the Influenza Polymerase. David Busath, David Michaelis, Gregory Mohl. March, 2017.

Invited Conference Presentations

- 9) "Catalizadores, Materiales Organicas, y Compuestos con Actividad Biologica: El Poder de la Quimica Organica. AMQO-2023, Monterrey Mexico. Invited Keynote Speaker 10/2023.
- 8) "Bimetallic Catalysis with 2-Phosphinoimidazole-Derived Pd-Pd and Rh-Rh Complexes." Forson, K. G.; Martinez, E. E.; Larsen, A.; Rodriguez Moreno, M.; Wayment, A. X.; Smith, S. J.; Ess, D. H.; Michaelis, D. J. Poster presentation, Beilstein Conference on Stereoselective Alkene Functionalizations, Rudesheim, Germany, 04/2022.
- 7) "Bimetallic catalysis with 2-phosphinoimidazole-derived Pd-Pd and Rh-Rh complexes." Michaelis, D. J.; Ence, C.; Martinez, E.; Forson, K. ACS Spring 2022 national meeting, Oral Presentation.
- 6) "Proximity-Induced Reactivity and Selectivity with a Rationally Designed Bifunctional Helical Peptide Catalyst." Michael J. Kinghorn, Gabriel A. Valdivia Berroeta, Donalee R. Chantry, Steven R. E. Draper, Jared S. Duval, Bryan M. Masino, Samuel B. Cahoon, Rachael R. Flansburg, Cory J. Conder, Mason S. Smith, Joshua L. Price, and David J. Michaelis Short talk and poster, Gordon Research Conference, Natural Products and Bioactive Compounds, Andover, NH, August 2017.
- 5) "A Rationally Designed Diels-Alder Peptide Catalyst that Displays Proximity-Induced Reactivity and Selectivity." Michael J. Kinghorn, Gabriel A. Valdivia Berroeta, Donalee R. Chantry, Steven R. E. Draper, Jared S. Duval, Bryan M. Masino, Samuel B. Cahoon, Rachael R. Flansburg, Cory J. Conder, Mason S. Smith, Joshua L. Price, and David J. Michaelis Poster presentation, Gordon Research Conference, Stereochemistry, Newport, RI, August 2016.
- 4) "A Rationally Designed Diels-Alder Peptide Catalyst that Displays Proximity-Induced Reactivity and Selectivity." Michael J. Kinghorn, Gabriel A. Valdivia Berroeta, Donalee R. Chantry, Steven R. E. Draper, Jared S. Duval, Bryan M. Masino, Samuel B. Cahoon, Rachael R. Flansburg, Cory J. Conder, Mason S. Smith, Joshua L. Price,* and David J. Michaelis. Poster presentation, Gordon Research Conference, Organic Reactions and Processes, North Easton, MA, July 2016.
- 3) "Heterocycle Synthesis with Ti-M Heterobimetallic Catalysts." Whitney K. Walker, Ryjul W. Stokes, Michael Talley, Diana Anderson, Benjamin Kay, Stacey J. Smith, Daniel H. Ess, David J. Michaelis. Invited talk and poster presentation, Gordon Research Conference, Heterocyclic Compounds, Newport, RI, June 2016.
- 2) "Heterobimetallic M-Ti Complexes as Catalysts for Electrophilic Transition Metal Catalysis." Walker, W. K.; Kay, B.; Andersen, D.; Talley, M.; Stokes, R. W.; Smith, S. J.; Ess, D. H.; Michaelis, D. J. Poster presentation, Gordon Research Conference, Organometallic Chemistry, Newport, RI, July 2015.
- 1) Invited short talk: "Early/Late Heterobimetallic Complexes for Enhanced Electrophilic Catalysts and Enantioselective Synthesis." Walker, W. K.; Stokes, R. W.; Smith, S. J.; Michaelis, D. J. and poster presentation of same title, Gordon Research Conference, Stereochemistry, Newport, RI, July 2014.

Invited Seminars:

University of Wisconsin (9/17), University of Minnesota (9/17), University of Michigan (10/17), Michigan State (10/17), Central Michigan (10/17), University of Illinois at Urbana Champaign (10/17), University of Illinois at Chicago (10/17), Abbvie (10/17), Caltech (10/17), UC Irvine (10/17), UC Santa Barbara (10/17), Princeton (11/17), University of Pennsylvania (11/17), Columbia (11/17), Stanford (11/17), Gilead (11/17), Scripps Research Institute (12/17), UC San Diego (12/17), University of Hawaii (12/17), Northwestern (1/18), University of Chicago (1/18), Temple University (2/18), University of Delaware (2/18), University of Houston (2/18), Rice University (2/18), University of Texas at Austin (2/18), University of Utah (11/18), Northern Arizona University (11/18), University of Las Vegas-Nevada (11/18), UC-Davis (11/2019), Dixie State University (12/2021); University of

Bielefeld, Germany (07/2022), Münster University, Germany (07/2022), Max Plank Institute for Kohlenforschung, Germany (06/2022), ICSN (CNRS), France (06/2022), University of Freiburg, Germany (07/2022), University of Vienna, Austria (07/2022).

Funding Awards:

External Awards (Awarded since prior promotion):

National Science Foundation PFI-TT Program (Grant #2345726)- Role: PI

Title: PFI-TT: Scale up of new materials that generate terahertz-frequency light for advanced scanning applications

Total Funds: \$550,000. Dates: 03/01/2024–02/28/2024

CPCChem Industrial Partnership

Title: Synthesis of new ligands for transition metal catalysis

Total Funds: \$205,000. Dates: 01/2023–12/2024.

National Science Foundation (DMR 2104317) – Co-Investigator with Jeremy Johnson

Title: Repurposing Crystalline Materials for Strong Terahertz Generation

Total Funds: \$555,227, Dates: 8/1/2021–7/30/2024

National Institutes of Health Grant (1R15GM134476-01)

Title: Multifunctional enzyme-like catalysts for organic synthesis

Total Funds: \$436,500, Dates: 8/1/2019–7/31/2022

Rio Tinto Kennecot Reclamation Grant – Coinvestigator with Matthew Madsen

Title: Improving Vegetation Establishment on Kennecott Mine Waste Rock Dumps and Tailings

Total Funds: \$570,954.00. Chemistry Portion: ~\$100,000. Dates: 06/15/2020–12/21/2022.

Prior to promotion to associate professor:

National Science Foundation Grant (CHE 1665015)

Title: Metal-Metal Cooperativity Effects in Synthesis and Catalysis

Total Funds: \$351,279, Dates: 7/1/2017–6/30/2020

ACS Petroleum Research Fund (PRF #56371-DNII)

Title: Early/Late Heterobimetallic Complexes for Catalytic Alkene and Alkyne Functionalization

Total Funds: \$110,000, Dates: 4/1/2016 – 8/31/2018

Pending External Grant Applications:

NSF DMREF PROGRAM, (08/2023–07/2027). Amount: 1,330,000 (BYU portion)

Title: Collaborative Research: DMREF: Data-driven materials discovery for intense terahertz generation. Role: Co-investigator

External: Applied but not funded:

NIH R15 Proposal – Submission: June 2023 (Peptide Catalysis)

NSF CHE Proposal – Submission: Sept 2020, 2021, 2022 (Bimetallic Catalysis)

NSF DMREF Proposal – Submission: Jan 2021 (THz generation materials discovery)

NSF SBIR Proposal – Oct 2020 (Terahertz organic material production)

Internal Awards:

College High Impact Research Proposal

Title: Catalytic Applications of Bimetallic Pd, Pt, and Rh Complexes

Total Funds: \$20,000. Dates: 1/2023-12/2023.

High-Impact Teaching Support (HITS) Grant:

Title: Solid-Phase Peptide Synthesis and 2D NMR analysis of 3-mer polypeptides – an Advance Spectroscopy Laboratory Experience

Total Funds: \$5000, Dates: 01/01/2022–08/31/2022

College High Impact Research Proposal

Title: A Collaborative Approach to PROTAC-Based Cancer Therapeutics

Dates: 12/1/2021–8/31/2022

Total Funds: \$20,000

Early Woolley Innovation Award, Department of Chemistry and Biochemistry

Title: Bimetallic Rh Catalysis for Heterocycle Formation

Dates: 7/1/2021–6/30/2021

Total Funds: \$40,000

College High Impact Research Proposal

Title: Organic Crystal Technology for THz Generation.

Dates: 6/1/2020–5/31/2021

Total Funds: \$40,000

Earl Wooley Innovation Award, Department of Chemistry and Biochemistry

Title: Rational design of peptide-based multifunctional catalysts with enzyme-like reactivity and selectivity. Total Funds: \$25,000

Brigham Young University Mentoring Grant

Title: Rational design of multifunctional enzyme-like catalysts for assembly-line chemical synthesis

Total Funds: \$20,000, Dates: 12/2016–12/2018

College High Impact Research Proposal

Title: Rational Design of multifunctional enzyme-like catalysts for organic synthesis.

Dates: 12/1/2015–12/31/2016

Total Funds: \$28,200

High-Impact Teaching Support (HITS) Grant:

Title: Introduction of asymmetric synthesis and analysis into Advanced Org. Chem. lab course for Majors. Total Funds: \$3500, Dates: 11/2013–11/2014