Michal Bajdich

[ˈmaɪkəl ˈbaɪdɪtʃ]

Curriculum Vitae

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Appointments

2013–present	**Stanford University and SLAC, SUNCAT Center for Catalysis** Department of Chemical Engineering and SLAC National Accelerator Laboratory *Leads*: Thomas F. Jaramillo and Frank Abild-Pedersen
2021–present	SLAC Full Staff Scientist, Principal Investigator Liquid Sunlight Alliance (LiSA), CleanTech-FOA, SLAC-LDRD, Principal Investigator
2016–2021	SLAC Associate Staff Scientist
2013–2016	SLAC Project Scientist

2011–2013	**UC Berkeley, Joint Center for Artificial Photosynthesis** Department of Chemical & Biomolecular Engineering and Lawrence Berkeley National Laboratory *Co-Advisors*: Prof. Alex T. Bell and Prof. Jens K. Nørskov Postdoctoral Fellow

2009–2011	**Oak Ridge National Laboratory, Materials Theory Group** *Advisors*: Dr. G. Malcolm Stocks and Dr. Fernando A. Reboredo Postdoctoral Fellow

Education

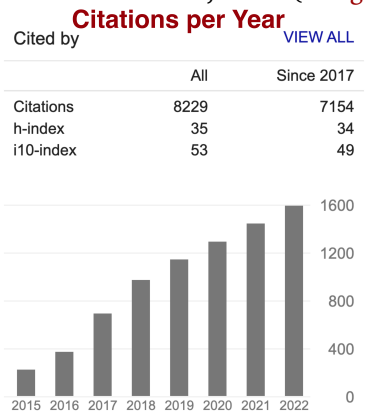
	North Carolina State University, Raleigh, NC, USA
2002–2007	Ph.D, Physics *Advisor*: Prof. Lubos Mitas
2002–2004	M.Sc. en route, Multi-disciplinary major: Physics, Chemistry & Math

	Comenius University, Bratislava, Slovakia
1996–2001	M.Sc., Physics, specialization in Condensed Matter *Advisor*: Prof. Richard Hlubina

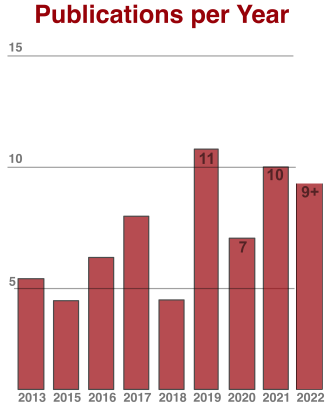
Publications & Metric

Summary as of November 30, 2022 (Google Scholar & ORCID & Web of Science)

Citations per Year



Publications per Year



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‘ (75) Baek, J.; Hossain, D.; Mukherjee, P.; Lee, J.; Winther, K.; Jiang, Y.; Chueh, W.; **Bajdich, M.**; Zheng, X. Synergistic Effects of Mixing and Strain in High Entropy Spinel Oxides for Oxygen Evolution Reaction. 10.21203/RS.3.RS-1879578/V1 (preprint, under review).

(74) Carlson, E. Z., Chueh, W., Mefford, J. T., **Bajdich, M.** Ab-Initio Energetics of Electrochemical Ion Insertion into Manganese Oxides. 10.26434/CHEMRXIV-2022-9GJ75 (preprint under review).

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(72) Zhou, L., Peterson, E. A., Rao, K. K., Lu, Y., Li, X., Lai, Y., Bauers, S. R., Richter, M. H., Kan, K., Wang, Y., Newhouse, P. F., Yano, J., Neaton, J. B., **Bajdich, M.**, Gregoire, J. M. Addressing solar photochemistry durability with an amorphous nickel antimonate photoanode. *Cell Reports Physical Science*, 3(7), 100959. 10.1016/J.XCRP.2022.100959 (2022).

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(70) Comer, B. M., Li, J., Abild-Pedersen, F., **Bajdich, M.***, M., Winther, K. T. Unraveling Electronic Trends in O and OH Surface Adsorption in the MO2Transition-Metal Oxide Series. *Journal of Physical Chemistry C*, 8. 10.1021/ACS.JPCC.2C02381, (2022).

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(1) Mitas, L., Drobný, G., **Bajdich, M.**, L. K. Wagner: Investigation of nodes of fermionic wave functions, In Condensed Matter Theories, edited by J. W. Clark and R. Panoff, *Nova Science Publishers*, vol. 20, ISBN: 1-59454-989-3 (2006).

Theses

2007 *PhD. Thesis under supervision of L. Mitas*: Generalized Pairing Wave Functions and Nodal Properties for Electronic Structure Quantum Monte Carlo, North Carolina State University, Raleigh, NC.

2001 | *Diploma Thesis under supervision of R. Hlubina*: Variational Study of the Stability of the Nagaoka State in the Two-Dimensional t-t' Hubard Model, Comenius University, Bratislava, Slovakia (in Slovak).

Honors and Invited Talks

2022 | The 100 all-time list of Slovak scientists around the world
2009 | Finalist, **Eugene P. Wigner Fellowship**, Oak Ridge National Laboratory
2001 | Dean's List, **Comenius University**, Slovakia
1992-1994 | Honorable Mention, **International Physics Olympiad**

2022 | Catalysis and Modelling Symposium, Jens Nørskov's 70th birthday, DTU, Denmark
2019 | University of California, Merced, Department of Materials Science, Merced, CA
2018 | North Carolina State University, Department of Chemistry, Raleigh, NC
2016 | University of Ostrava, Department of Physics, Czech Republic
2016 | University of Nevada, Reno, Department of Chemistry, Reno, NV
2015 | University of California at Santa Cruz, Department of Chemistry, CA
2015 | University of Olomouc, Regional Centre of Adv. Tech. and Materials, Czech Republic
2009 | University of Georgia, Recent Developments in Computer Simulation Studies in Condensed Matter Physics, Athens, GA
2005 | Cornell University, Recent Developments in Electronic Structure Methods, Ithaca, NY
2005 | Pacifichem, Honollu, HI

Proposals and Grants

2015–present | Lead PI for NERSC DOE Supercomputing allocation for SUNCAT FWP
2021–present | Lead PI for NERSC DOE Supercomputing allocation for LiSA
2022 | **DOE-BES Field Work Proposal SUNCAT (23-25)**, CoPI for Task 2 for Electrocatalysis, (applied)
2022 | **Stanford Precourt Institute for Energy and Stanford Hydrogen Initiative seed grant**, CoPI with Tyler Mefford, (awarded, 80K, 1 year)
2022 | **SLAC-LDRD**, single PI, *High precision heterogeneous catalysis by QMC method* (awarded, $220K, 2 years)
2022 | **DOE-BES Clean Tech FOA**, *Understanding interfacial phenomena for solar H2 production and N2 reduction*, Co-PI with Prof. Jaramillo (awarded, $1.5M, 3 years)
2021 | FOA pre-preposals for DE-FOA-0002481, DE-FOA-0002608, DE-FOA-0002676
2020 | **DOE-Hub The Liquid Sunlight Alliance (LiSA) (21-25)**, CoPI on Photocatalyst stability and reconstruction (awarded, $60M total)
2020 | Collaborating Laboratory Scientist for the Office of Science Graduate Student Research (SCGSR) Program (awared to Jaclyn Lunger, 6 mo. stay)
2019 | DOE-BES Field Work Proposal SUNCAT (20-22), CoPI for Task 2 for Electrocatalysis (awarded, $3.6M)
2018 | SLAC LDRD co-PI w. Yasuyuki Hikita and Harold Y. Hwang ($300K, 2 years, awarded)
2013 | Joint Center for Artificial Photosynthesis (Contributed)
2008 | DOE INCITE Supercomputing allocation (Contributed)

Teaching and Mentoring Experience

2022 | LiSA 101 theory series
2019 | **Guest lectuer for CHEMENG142/242**: Basic Principles of Heterogeneous Catalysis with Applications in Energy Trans., Stanford Engineering
1999–2001 | **Private Tutor** for Math and Science College Entry Exam, Slovakia

	Students
2021–present	Evan Zoltan Carlson, PhD student, Stanford Mat. E. w. Will C. Chueh
2022	Michael Craig, Summer Phd student, Trinity College Dublin w. Max. Garcia-Melchor
2020	Xinjian Shi, PhD committee member, Stanford Mech. E. w. Xiaolin Zheng
2019	Alaina Strickler, PhD committee member, Stanford Chem E. w. T. F. Jaramillo
2020–2021	Jaclyn Rose Lunger, SCGSR scholar, Phd candidate at MIT w. Yang Shao-Horn
2018–2021	Anjli M. Pattel, Phd candidate w. Jens K. Nørskov
2018–2021	Raul F. Flores, Phd candidate w. Jens K. Nørskov
2017–2020	Joel Gauthier, Phd candidate w. Jens K. Nørskov
2017–2019	Robert Sandberg, Phd candidate w. Jens K. Nørskov
2016–2017	Andrew Doyle, Phd candidate w. Jens K. Nørskov
	Postdoctoral Associates
2022–present	Neha Bothra, Postdoctoral associate
2021–2022	Karun Kumar Rao, Postdoctoral associate
2021–present	Md Delowar Hossain, Postdoctoral associate
2020–present	Viswanath Pasumarthi, Postdoctoral associate
2019–2021	Jiang Li, Postdoctoral associate
2019–2021	Hongie Peng, Postdoctoral associate
2018–2019	Jose A. Garrido Torres, Postdoctoral associate
2018–2019	Philomena Schlexer, Postdoctoral associate
2017–2019	Zhenghang Zhao, Postdoctoral associate
2017–2018	Seoin Back, Postdoctoral associate
2017–2018	Pallavi Bothra, Postdoctoral associate

Press and News Releases

June 2022	Optimizing iridium sites Nature Catalysis Highlight
Apr. 2022	Team creates map for production of eco-friendly metals MIT NEWS
Aug. 2021	A new approach creates an exceptional single-atom catalyst for water splitting SLAC NEWS
Jan. 2021	Study shows tweaking one layer of atoms on a catalyst's surface can make it work better SLAC NEWS
Sep. 2019	New route to carbon-neutral fuels from carbon dioxide discovered Stanford News Bioengineer.org Phys.org
	Recycling Carbon Dioxide as Fuel Could Lead to Zero-Emissions Flight Travel Inverse
	Stanford Researchers Discover a New Route to Carbon-Neutral Fuels From Carbon Dioxide Scitechdaily.com
	Ceria catalyst could help produce carbon-neutral fuels PhysicsWorld.com
May 2019	Our PNAS article on molecular-like catalysts in water-splitting devices @SLAClab

Outreach and Professional Development

2020–present	**Editor** Modelling, Theory and Computational Catalysis (Frontiers in Catalysis)
2021	**Co-organizor** SUNCAT Session 2022
2019	**Currator of SUNCAT's Twitter** SUNCAT_Center, +2K followers
2018	**Co-founder** of Catalysis-hub.org, +5000 active users
2017–present	**AICHE programming committee**, Catalysis and Reaction Engineering Division-A20
2017–2018	**Guest Editor** for Special Issue of Materials, MDPI Journal: Nano-based Catalysts for Renewable Energy
2009–present	**Reviewer** for catalysis and chemistry journals orcid.org/0000-0003-1168-8616(13) of *ACS, Nature, PNAS, APS, Elsevier, WILEY, Cell Press, Angewande Chemie,*
2003–present	American Physical Society member
2013–present	American Chemical Society and Materials Research Society member
2014–present	American Institute of Chemical Engineers member
2003–2005	**International Student Ambassador** North Carolina State University

References

Jens K. Nørskov, Technical University of Denmark
The Villum Kann Rasmussen Professor at the Department of Physics,
Recipient of the 2018 Niels Bohr Medal in Physics,
Founder of the SUNCAT Center
jkno@dtu.dk, ph. +45-45-25-3818, 2800, Kongens Lyngby, Denmark.

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Distinguished University Professor of Physics and Astronomy,
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