MICHAEL A. GREEN

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Experienced laboratory scientist with a fluent understanding of materials fabrication and characterization. Full-stack software developer with experience in data analysis and visualization, computational modeling, and web application development. Multiple years of R&D work, resulting in the authoring of 20 research manuscripts, featured and published in several of the top journals for materials science and photonics. Practiced orator, participating as an oral presenter for the American Chemical Society at Regional Conferences and the National Expo. Driven individual who possesses the desire to take on the greatest of challenges with logical and intelligent approach.

EDUCATION

Ph.D. Chemistry, University of Missouri–Kansas City. *May 2020.*

Dissertation: "On the advancement of core/shell titanium dioxide nanomaterials for microwave absorption" – Principal Advisor: Dr. Xiaobo Chen

M.Sc. Chemistry, University of Missouri–Kansas City. *May 2019.*

Seminar: "Computational Methods for Chemistry: Experimental Analysis and Data Visualization in Python 3.7" – Principal Advisor: Dr. Xiaobo Chen

B.Sc. Chemistry (minor Mathematics), University of Idaho. *July 2016.*

Research: "Activity of nanostructured C@ETS-10 sorbent for capture of volatile radioactive iodine from gas stream" – Principal Advisor: Dr. Vivek Utgikar

PROFESSIONAL EXPERIENCE

RESEARCH ASSISTANT, Department of Chemistry, University of Missouri–Kansas City. *Aug. 2016 – present*

Developed micro- and nanoscale materials for application in clean energy systems, photocatalysis, water photolysis, physical adsorption, and microwave absorption. Dissertation research focused on understanding and utilizing the bulk dielectric and magnetic field properties of materials so to induce interaction with GHz-range electromagnetic radiation. Utilized and established a wide variety of synthesis methodologies to generate materials such as pure and perturbated -oxides (Titanium, Aluminum, Silicon, Zirconium, *et alia*), -sulfides (Copper, Copper-Iron, Cobalt, *et alia*), -phosphides (Iron, Cobalt), conductive polymers, graphitic carbon nitrides, polyoxometalates, and metal-organic frameworks, through fabrication processes such as solvothermal/hydrothermal methods and PECVD. Developed expertise in a broad array of instrumentation techniques, such as Complex Permittivity and Permeability Network Analysis, Polarized Light Microscopy, UV-Vis Spectroscopy, Raman Vibrational Spectroscopy, SEM/EDX, TEM, XPS, XRD, BET, FTIR, EPR,

NMR/SSNMR, PALS, *et alia*, for materials characterization and analysis. Developed full-stack scientific computing solutions for materials research, using HTML5/CSS3/JavaScript to develop front-end user interfaces, Flask/Python for back-end server functionality, and PostgreSQL and SQLite databases for data storage. Created Python modules to accurately analyze, simulate, and predict materials performance though numerical methods and machine learning. Modules made use of custom C and C++ extensions for increased computational performance. Built the libRL library, which is an open-source Python library (https://github.com/1mikegrn/libRL) used for state-of-the-art microwave absorption characterization through numerical methods and machine learning. Also built the CompGen library, which is a proprietary library that uses personally-developed materials models to accurately predict multi-system composite performance. Established laboratory protocols for the treatment and disposal of hazardous chemical waste in accordance with EH&S, EPA, and the State of Missouri guidelines. Research supported by the National Science Foundation under NSF grant 1609061, and affiliated/collaborated with The Environmental Protection Agency, Lawrence Berkeley National Laboratory, *et alia*.

TEACHING ASSISTANT, Department of Chemistry, University of Missouri–Kansas City. *Jan. 2017 – May 2018; Jan. 2019 – May 2019*

Prepared and presented in-depth chemistry material for undergraduate collegiate studies, and supervised in-lab experimental procedures. Participated in experimental preparation, which included the maintenance of legacy laboratory equipment such as GC, distillation, UV-Vis, Bomb Calorimeter, Oscilloscope, and FTIR equipment. Worked with students to update laboratory procedures, including but not limited to writing software to automate experimental analysis and updating experimental procedures. Frequently interacted with students via small group and one-on-one tutoring on a weekly basis. Oversaw the fair, responsible grading for submitted laboratory coursework. Laboratory courses taught include General Chemistry (150 students per semester, 3 semesters), Elements of Chemistry (20 students per semester, 1 semester), and Experimental Physical Chemistry (20 students per semester, 2 semesters).

RESEARCH ASSISTANT, Department of Chemical and Materials Engineering, University of Idaho. *Jan. 2014 – July 2016*

Studied the properties of volatile elements that were the result of nuclear fission. Research focused on the physical adsorption of volatile radionuclei onto various materials synthesized in lab, such as hollow carbon nano-polyhedrons and metal-organic frameworks. Work involved theoretical studies of molecular compounds, synthesis of compounds, analysis (GC/MS, BET, XRD, Raman, UV-Vis, *et alia*), the engineering and construction of testing apparatuses and miscellaneous devices for general laboratory use, and composition of written material for publication. Research was conducted in conjuncture with the US Department of Energy and the Idaho National Laboratory.

COMMUNITY

CHEMISTRY INSTRUCTOR, School of Medicine, University of Missouri–Kansas City. *Aug. 2016 – Aug. 2019*

Lectured on chemistry topics for both the Saturday Academy and Summer Scholars diversity outreach programs offered through the University of Missouri School of Medicine in Kansas City, MO. For Saturday Academy, responsibilities consisted of designing and presenting chemistry lectures over the weekends to enrolled middle and high school students from the Kansas City area who had the desire to obtain more exposure to math and science in their pre-collegiate education. Topics covered therein included General Chemistry, Environmental Chemistry, Organic Chemistry, and Physical Chemistry. The summer scholars outreach program consisted of an intensive two-week lecture series for Kansas City area high school seniors, focusing on Organic Chemistry fundamentals, Organic Chemistry Reactions, and Biochemistry.

AWARDS, HONORS, MEMBERSHIPS, AND STATISTICS

Memberships:	AAAS, American Chemical Society
Reviewerships:	Journal of Materials Research (x4), Journal of Applied Physics (x2)
Assistantships:	Graduate Research (*May 2018 – Jan. 2019; May 2019 – present*), Graduate Teaching (*Jan. 2017 – May 2018; Jan. 2019 - May 2019*) Undergraduate Research (*May 2014 – July 2016*)
Awards:	Microelectrovolt Electromag. Scholarship, (*Aug. 2018 – present*) Doctoral N/R Award (*Jan. 2017 – present*)
Honors:	ΦΚΦ (2019) *for attaining a graduation class rank above the 90th percentile* ΣΞ (2019) *for exemplary scholarship demonstrated through published research*
Statistics:	20 manuscripts; 12 first-author; 8 co-author Number of Citations: 344; h-index: 12; i10-index: 13 Highest IF: 15.13; Average CiteScore: 7.02

MENTORED STUDENTS

S. Alzuabi, graduate researcher. Current position: M.Sc. student, University of Missouri–Kansas City MO.

T. Bayomi, graduate researcher. Current position: M.Sc. student, University of Missouri–Kansas City MO.

A. Nambiar, undergraduate researcher. Current position: M.D. medical student, University of Missouri–Kansas City MO.

C. Ramsey, undergraduate researcher. Current position: M.D. medical student, University of Missouri–Kansas City MO.

S. Atkins, undergraduate researcher. Current position: Ph.D. graduate student, The Ohio State University–Columbus, OH.

A. Roach, undergraduate researcher. Current position: Ph.D. graduate student, Bowling Green State University, Bowling Green, OH.

T. Gardner, undergraduate researcher. Current position: research scientist, Nostrum Laboratories, Inc. Kansas City, MO.

L. Hoang, undergraduate researcher. Current position: laboratory technician, ExxonMobil, Kansas City, MO.

M. Dressler, undergraduate researcher. Current position: B.Sc. chemistry undergraduate student, University of Missouri–Kansas City MO.

A. Tran, undergraduate researcher. Current position: B.Sc. chemistry undergraduate student, University of Missouri–Kansas City MO.

J. Velazquez, undergraduate researcher. Current position: B.Sc. chemistry undergraduate student, University of Missouri–Kansas City MO.

R. Smedley, undergraduate researcher. Current position: B.Sc. chemistry, undergraduate student, University of Missouri–Kansas City MO.

H. Nawaz, undergraduate researcher. Current position: B.Sc. chemistry, undergraduate student, University of Missouri–Kansas City MO.

REFERENCES

Dr. Xiaobo Chen
chenxiaobo@umkc.edu

Dr. Charles Wurrey
wurreyc@umkc.edu

Dr. James Murowchick
murowchickj@umkc.edu

Dr. Kathleen Kilway
kilwayk@umkc.edu

Dr. Richard Buszek
buszekk@umkc.edu

Dr. Vivek Utgikar
vutgikar@uidaho.edu

PUBLISHED WORKS

20. M. Green, X. Chen, "Data Functionalization for Gas Chromatography in Python." *J. Chem. Ed.* 97, (2020) 1172-1175.

19. H. Lin, M. Green, L. Xu, X. Chen, B. Ma, "Microwave Absorption of Organic Metal Halide Nanotubes." *Adv. Mater. Interf.* 7 (2020) 1901270.

18. M. Green, X. Chen. "libRL: A Python library for the characterization of microwave absorption." *J. Open Source Software* 4 (2019) 1868.

17. M. Green, Y. Li, Z. Peng, X. Chen. "Dielectric, magnetic, and microwave absorption properties of polyoxometalate-based materials." *J Magn. Magn. Mater.* 497 (2020) 165974.

16. M. Green, X. Chen. "Recent progress of nanomaterials for microwave absorption." *J. Materiomics.* 5 (2019) 503-541, July 2019. *Featured Cover Issue*

15. F. Tao, M. Green, A. Valenzua Garcia, T. Xiao, A. T. V. Tran, Y. Zhang, Y. Yin, X. Chen. "Recent progress of nanostructured interfacial solar vapor generators." *Appl. Mater. Today.* 17 (2019) 45-84.

14. F. Tao, M. Green, A. T. V. Tran, Y. Zhang, Y. Yin, X. Chen. "Plasmonic Cu9S5 nanonets for microwave absorption." *ACS Appl. Nano Mater.* 2 (2019) 3836-3847.

13. M. Green, A. Tran, R. Smedley, A. Roach, J. Murowchick, X. Chen. "Microwave Absorption of Magnesium/Hydrogen-Treated Titanium Dioxide Nanoparticles." *Nano Mater. Sci.* 1 (2019) 48-59.

12. M. Green, P. Xiang, Z. Liu, J. Murowchick, X. Tan, F. Huang, X. Chen, "Microwave Absorption of Aluminum/Hydrogen Treated Titanium Dioxide Nanoparticles." *J. Materiomics.* 5 (2019) 133-146.

11. M. Green, Z. Liu, P. Xiang, Y. Liu, M. Zhou, X. Tan, F. Huang, L. Liu, X. Chen. "Doped, conductive SiO_2 nanoparticles for large microwave absorption." *Light: Science & Applications.* 7 (2018) 87.

10. M. Green, Z. Liu, R. Smedley, H. Nawaz, X. Li, F. Huang, X. Chen. "Graphitic Carbon Nitride Nanosheets for Microwave Absorption." *Materials Today Physics.* 5 (2018) 78-86.

9. M. Green, Z. Liu, P. Xiang, X. Tan, F. Huang, L. Liu, X. Chen. "Ferric Metal-Organic Framework for Microwave Absorption." *Materials Today Chemistry.* 9 (2018) 140-148. *Featured in Materials Today*

8. M. Green, J. Xu, L. Hualong, J. Zhao, K. Li, L. Liu, H. Qin, Y. Zhu, D. Shen, X. Chen. "Terahertz Absorption of Hydrogenated TiO2 Nanoparticles." *Materials Today Physics.* 4 (2018) 64-69.

7. M. Green, L. Tian, P. Xiang, J. Murowchick, X. Tan, X. Chen. "FeP Nanoparticles: A New Material for Microwave Absorption." *Materials Chemistry Frontiers.* 2 (2018) 1119-1125.

6. M. Green, L. Tian, P. Xiang, J. Murowchick, X. Tan, X. Chen. "Co_2P Nanoparticles for Microwave Absorption." *Materials Today Nano.* 1 (2018) 1-7.

5. Y. Liu, Z. Li, M. Green, M. Just, Y. Li, X. Chen, "Titanium Dioxide Nanomaterials for Photocatalysis." *Journal of Physics D: Applied Physics.* 50 (2017) 1-15.

4. L. Tian, J. Xu, M. Just, M. Green, L. Liu, X. Chen. "Broad Range Energy Absorption Enabled by Hydrogenated TiO2 Nanosheets: from Optical to Infrared and Microwave." *Journal of Materials Chemistry C*. 5 (2017) 4645-4653.

3. S. U. Nandanwar, K. Coldsnow, M. Green, V. Utgikar, P. Sabharwall, D. E. Aston. "Activity of nanostructured C@ETS-10 sorbent for capture of volatile radioactive iodine from gas stream." *Chemical Engineering Journal.* 287 (2016) 593-601.

2. S. U. Nandanwar, J. Dantas, K. Coldsnow, M. Green, V. Utgikar, P. Sabharwall, D. E. Aston. "Porous microsphere of magnesium oxide as an effective sorbent for removal of volatile iodine from off-gas stream." *Adsorption: Journal of the International Adsorption Society.* 22 (2016) 335-345.

1. S.U. Nandanwar, K. Coldsnow, M. Green, V. Utgikar, P. Sabharwall, D. E. Aston. "Treatment of Radioactive Contaminants in Off-Gases Using Carbon Supported ETS-10 nanosorbent." *Transactions of the American Nuclear Society.* 111 (2014) 1121-1122.

PRESENTATIONS

10. M. Green, X. Chen. "Synergistic Metal/Hydrogen Treatment of Anatase Titanium Dioxide Nanoparticles for Inducing Broad-Range Electromagnetic Interaction." American Chemical Society Spring 2020 National Meeting and Expo, Oral Presentation. March 26th, 2020. Philadelphia, PA.*

9. M. Green, X. Chen. "Aluminum/Hydrogen treatment of Titanium Dioxide Nanoparticles for Microwave Absorption." American Chemical Society Midwest Regional Meeting, Oral Presentation. October 18th, 2019. Witchita, KS.

8. M. Green, X. Chen. "Data Functionalization for Gas Chromatography in Python." American Chemical Society Midwest Regional Meeting, Oral Presentation. October 18th, 2019. Witchita, KS.

7. M. Green. "Computational Methods for Chemistry: Experimental Analysis and Data Visualization in Python 3.7." Department of Chemistry Graduate Seminar, Oral Presentation. March 6th, 2019. Kansas City, MO.

6. M. Green, X. Chen. "Ferric Metal-Organic Framework for Microwave Absorption." American Chemical Society Midwest Regional Meeting, Oral Presentation. October 21st, 2018. Ames, IA.

5. M. Green, X. Chen. "Ferric Metal-Organic Framework for Microwave Absorption." Department of Chemistry Graduate Seminar, Oral Presentation. October 16th, 2018. Kansas City, MO.

4. M. Green, X. Chen. "Hydrogenated Titanium Dioxide Nanomaterials for Microwave Absorption." American Chemical Society Midwest Regional Meeting, Extended Feature Oral Presentation. Friday, October 20th, 2017. Lawrence, KS.

3. M. Green, X. Chen. "Hydrogenated Titanium Dioxide Nanomaterials for Microwave Absorption." Department of Chemistry Graduate Seminar, Oral Presentation. University of Missouri-Kansas City. Tuesday, October 17th, 2017. Kansas City, MO.

2. S. U. Nandanwar, M. Green, K. Coldsnow, V. Utgikar, P. Sabharwall, D. E. Aston. "Adsorption of volatile iodine from off-gas stream using ETS-10 supported hollow carbon nanosorbent." American Nuclear Society Winter Conference, Oral Presentation. Thursday November 12th, 2015. Washington, DC.

1. S.U. Nandanwar, K. Coldsnow, M. Green, V. Utgikar, P. Sabharwall, D. E. Aston. "Treatment of Radioactive Contaminants in Off-Gases Using Carbon Supported ETS-10 nanosorbent." American Nuclear Society Winter Conference, Oral Presentation. Wednesday, November 12th, 2014. Anaheim, CA.

* Due to the COVID-19 outbreak the Spring 2020 Expo was presented virtually via SciMeetings