

Greg M. Swain

Department of Chemistry (75%)

The Graduate School (25%)

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Education

- **1985** B.A. (Chemistry), University of Texas at Dallas. Advisor: Wayne Britton.
- **1991** Ph.D. (Analytical Chemistry), University of Kansas. Advisor: Theodore Kuwana.
- **1991-92** Postdoctoral Fellow, Space Power Institute, Auburn University.
Advisor: Bruce J. Tatarchuk.
- **1992-93** JSPS/NSF Postdoctoral Fellowship, Tohoku University, Sendai, Japan. Advisor: Kingo Itaya.

Academic Appointments and Employment History

- **2019 – present** RCRSCA Education Coordinator, The Graduate School, Michigan State
- **2017 – present** Graduate Program Director, Neuroscience Program, Michigan State University
- **2010 – present** Adjunct Professor, Department of Chemical Engineering and Materials Science, Michigan State University
- **2008 – present** Member Neuroscience Program, Michigan State University
- **2005 – present** Faculty Member, Fraunhofer Center for Coatings and Diamond Technology, Michigan State University
- **2003 – present** Professor, Department of Chemistry, Michigan State University
- **2000 – 2003** Associate Professor, Department of Chemistry, Michigan State University
- **1998 – 2000** Associate Professor and Associate Department Head, Department of Chemistry, Utah State University
- **1994-1998** Assistant Professor, Department of Chemistry, Utah State University
- **1985-1987** Reservoir Chemist, Atlantic Richfield Oil and Gas Co. (Plano, TX)
- **1983-1985** Research Chemist, Polytronix, Inc. (Richardson, TX)

Current and Recent MSU Service and Academic Leadership Work

- Academic Advancement Network (AAN) Leadership Fellow, MSU (2018-2019)
- MSU Chemical Hygiene Committee (2018 – present)
- MSU Steering Committee, At-Large Member (2017-present)
- MSU Faculty Senate, *ex officio*, At-Large Member (2017-present)
- MSU University Council, *ex officio*, At-Large Member (2017-present)
- Search Committee, Faculty Athletic Representative MSU (2017-2018)
- Search Committee, Dept. Chem. Engr. and Mater. Science, MSU (Polymer Science) (2017-2018)
- Graduate Advisory Committee, Neuroscience Program, MSU (2017-present)
- Faculty Advisory Committee (Vice Chair), Department of Chemistry, MSU (2018-2019)
- Safety Committee, Department of Chemistry, MSU (2018-present)
- Led efforts to secure a donated PHI-5600 Surface Analysis System from Dow Chemical Co.
- Reviewer University Fellowship Committee (2017-2019)
- REU Program Director, Department of Chemistry, Michigan State University (2014-present)

Awards

- Guest Professorship, Keio University (Japan), Faculty of Science and Technology (2019)
- CNS Outstanding Faculty Award, Michigan State University (2018)
- Fulbright Scholar Award (Carbon Electrodes and Environmental Electrochemistry) – Ecuador (2019-2021)
- Fulbright Specialist Award (Diamond and Diamond-Like Carbon Electrodes) – Czech Rep. (2018)

- 2015 *Corrosion* Best Paper Award (Award presented at CORROSION 2015)
- CAPES Visiting Scholar, Federal University of São Carlos, Brazil (2013-2016)
- Summer Research Fellow, Université Joseph Fourier and LEMPI, Grenoble, France (2001)
- Society for Electroanalytical Chemistry, Young Investigator Award (1998)
- In 2018-19, I was nominated by external peers for an Alexander von Humboldt Award, the C.N. Reilly Award from the Society of Electroanalytical Chemistry and the ACS Division of Analytical Chemistry Award in Electrochemistry.

Professional Societies and Service

- American Chemical Society (1989-present)
- Electrochemical Society (1992-present)
- Society for Electroanalytical Chemistry (1994-present)
- Materials Research Society (2009-present)
- International Society of Electrochemistry (2012-present)
- National Association of Corrosion Engineers (NACE) (2015-present)

- Editor, *Electroanalysis* (Wiley) (2018-present)

- Associate Editor, *Diamond and Related Materials* (Elsevier) (2004-2008)
- Editor, *Diamond and Related Materials* (2009-2011)
- Editor-in-Chief, *Diamond and Related Materials* (2011-2014)

- Editorial Board: *Advanced Engineering Materials* (2014-present)
- Editorial Advisory Board: *Critical Reviews in Analytical Chemistry* (Taylor & Francis) (2014-present)
- Editorial Board: *Electroanalysis* (2017-2018)

- Guest Editor for a special issue for *Electroanalysis* (Wiley) titled “Nanocarbon Electrochemistry and Electroanalysis”. Jan 2016.
- Guest Editor for a special issue for *Electrochimica Acta* (Elsevier) titled “Electrochemical Properties and Applications of Advanced Carbon Materials”. Jan. 2016.

- Regular reviewer for Analytical Chemistry, Analytica Chimica Acta, Journal of the Electrochemical Society, Electrochimica Acta, Electroanalysis, Journal of Electroanalytical Chemistry, Langmuir, Chemistry of Materials, Electrochimica Acta, Journal of Applied Electrochemistry, Analyst, Talanta, Nature Methods, Corrosion, ACS Materials and Interfaces, Environmental Science and Technology, Surface Coatings and Technology, Thin Films, etc.

- Member – Committee on Professional Training (American Chemical Society) (2015-2019)

Current Research Activities: I have a long history of interdisciplinary and collaborative research in the area of physical and analytical electrochemistry, carbon material science, neuroanalytical chemistry, corrosion science and biomedical device design. Current research topics in my group include:

(i) fundamental studies of electron-transfer reactions (kinetics and mechanisms) at boron-doped diamond and nitrogen-incorporated tetrahedral carbon thin-film electrodes in aqueous electrolytes, organic electrolytes and room temperature ionic liquids,

(ii) electroanalytical applications of various carbon electrodes in amperometric detection coupled with flow injection analysis and HPLC for the detection of biological and environmental analytes,

(iii) optically transparent diamond electrodes for transmission and long optical path length thin-layer spectroelectrochemical measurements in aqueous electrolytes and room temperature ionic liquids to better understand double layer structure and adsorption processes involved in electrochemical reactions,

(iv) chemically-modified carbon electrodes (chemical sensors and biosensors) and ink-jet printed electrode materials for use in new biomedical devices for (i) measuring nitric oxide and peroxy nitrite in exhaled breath condensate – assessment of airway inflammation in respiratory disease and (ii) sensors for measuring biomarkers of infection and healing in chronic wounds – initial work toward a “smart bandage”.

(v) application of diamond and carbon fiber microelectrodes, and microsensors for measuring serotonin, norepinephrine, nitric oxide and ATP in *in vitro* neurochemical measurements at blood vessels and in the gastrointestinal tract for the purpose of understanding how neurogenic signaling is altered in disease states such as hypertension and diet-induced obesity, and

(vi) understanding the formation, chemical structure and corrosion protection mechanisms of environmentally friendly coating systems used for corrosion control of aerospace aluminum alloys and understanding the degradation mechanisms of carbon fiber epoxy composites used in aerospace applications.

International Activities in Graduate Research and Education

I have been engaged for two decades in multiple international collaborative activities (South America and Europe) providing research training opportunities for undergraduate and graduate students, and postdoctoral researchers. These collaborators are listed below along with the names of the student or postdoctoral researchers who were mentored.

Professors Jerzy Strojek and Jerzy Zak (Silesian Technical University, Gliwice, Poland) – served as Ph.D. preceptor for Malgorzata Witek (Ph.D. 2002), Mateusz Hupert (Ph.D. 2002)

Professor Jiri Barek (Charles University, Prague, Czech. Rep.) – hosted the following students and postdocs: Alexander Munk (1998), Karolina Pecková (2004-2005), Dr. Veronika Mocko (2003-2007), Dr. Josef Cvacka (1998-1999 and 2001-2002), Dr. Martin Novotny (2005-2008), Dr. Jesse Seegmiller (2004-2005), Dr. Suzana Babankova (2006-2008) and Romana Jarošová (2014-2019).

Taught a short course on diamond electrochemistry to graduate and undergraduates at Universidade Federal de São Carlos, Brazil, February 14-22, 2009.

Professor Romeu C. Rocha-Filho (Universidade Federal de São Carlos, Brazil) – hosted Ph.D. students Ricardo Brocenschi (2012), Naihara Wachter (2015) and Kallyni Irikura (2016).

Professor Orlando Fatibello-Filho (Universidade Federal de São Carlos, Brazil) – hosted Ph.D. student Bruna Claudia Lourenção (2012).

Professor Rodrigo Del Rio (Pontificia Universidad Católica de Chile, Santiago, Chile) – hosted Ph.D. student Boris Duran (2012).

Professor Bernardo A. Frontana-Urbe (Universidad Nacional Autónoma de Mexico (UNAM) – hosted Ph.D. student Patricio Espinoza (2013).

Professor Patricio Espinoza (Universidad Central del Ecuador) – hosted undergraduate students, Andres Ramon and Lenin Ruiz Davila (2014), Elizabeth Espinosa (2017), Vanessa Maldonado (2017), Victoria Perugachi (2017) and Maria Nevarez Martinez (2017-2018).

Professor Robert Bogdanowicz (Gdańsk University of Technology, Poland) – hosted Ph.D. student Michal Sobaszek (2015).

Professors Sonia Biaggio and Nerilso Bocchi (Universidade Federal de São Carlos, Brazil) – hosted master's students, Paulo Zutim and Diego da Silva (2015) and Samuel Mattoso (2019)

Peer Reviewed Publications (since 2008, most recent are listed below)

(H-Index = 54, Published Items = 224, Times Cited = 9,357 Avg. Citations per Article = 36)
{all citations listed are peer-reviewed and all first authors are my students who led the work}

ResearcherID: B-302302010 <http://www.researcherid.com/rid/B-3023-2010>

Google Scholar: http://scholar.google.com/citations?user=Wl4v_OoAAAAJ&hl=en

175. *An Electrochemical Biosensor for ATP with Enzymes Entrapped in a PEDOT Film*, Peteu SF; Russell SA; Galligan JJ; Swain GM. ELECTROANALYSIS, in review.
174. *Strongly Coupled Redox-Linked Conformational Switching at the Active Site of the Non-Heme Iron-Dependent Dioxygenase, TauD*. John CW, Swain GM, Hausinger RP, Proshlyakov DA. JOURNAL OF PHYSICAL CHEMISTRY B. 2019 (123) 7785-7793.
173. *Detection of H₂O₂ from the Reduction of Dissolved Oxygen on TCP-Coated AA2024-T3: Impact on the Transient Formation of Cr(VI)*, Shruthi TK; Swain GM. JOURNAL OF THE ELECTROCHEMICAL SOCIETY 2019 (166) C3284-C3289.
172. *Temperature Dependence of the Heterogeneous Electron-Transfer Rate Constant and Diffusion Coefficient for Ferrocene Carboxylic Acid in Room Temperature Ionic Liquids at Various Carbon Electrodes*, Jarosova R; Bhardwaj K; Swain GM, JOURNAL OF ELECTROANALYTICAL CHEMISTRY, in review .
171. *Evaluation of a New Trivalent Chromium Process (TCP) Conversion Coating on AA2024-T3 That Requires No Surface Pretreatment*. Walton J; Shruthi TK; Yancey D; Vlasek P; Westre S; Swain GM. JOURNAL OF THE ELECTROCHEMICAL SOCIETY 2019 (166) C589-C599.
170. *Plasma-Assisted Chemical Vapor Deposition of Diamond at Various Offcut Angles from the (001) Crystallographic Plane*. Bhattacharya A.; Jarosova R.; Diaz R.; Hardy H.; Swain GM., Grotjohn TA. ACS APPLIED MATERIALS AND INTERFACES, in review.
169. *Potential-Dependent Capacitance of Boron-Doped Nanocrystalline Diamond Electrodes in RTILs: Effect of Surface Chemistry*. Bhardwaj K.; Swain GM. LANGMUIR, in review.
168. *Ink-jet Printed Carbon Nanotube Electrodes for Monitoring Biochemical By-Products in a Wound Fluid Simulant*. Jarošová R.; McClure SE.; Gajda M.; Jović M.; Girault HH.; Lesch A.; Maiden M.; Waters C.; Swain GM. ANALYTICAL CHEMISTRY 2019 (91) 8835-8844.
167. *Ionic Liquids. A Unique and Useful Class of Materials*. Ma K.; Jarošová R.; Wang Y.; Swain GM.; Blanchard GJ. CHEMICAL EDUCATOR 2018 (23) 265-272.
166. *Diamond/Ti Anodes: Electrochemical Properties and Application for the Degradation of Atrazine*. Song Y; Voice TC; Swain GM. ELECTROCHIMICA ACTA, submitted December 2018.
165. *Conductive Diamond: Synthesis, Properties, and Electrochemical Applications*, Yang N; Siyu Y; Macpherson JV; Einaga Y; Zhao H; Zhao G, Swain GM; Jiang X. CHEMICAL SOCIETY REVIEWS 2019 (48) 157-204.
164. *Evaluation of BDD Electrode in the Determination of Cd(II), Pd(II), and Hg(II) in Waste Mining*, Tafur J, Espinoza-Montero P, Manciatì C, Fierro-Naranjo C, Swain GM, Fernandez L. REV. TEC. ING. UNIV. ZULIA 2018, (4) 44-52.

163. *HPLC-EC Analysis of Estrogenic Compounds Using Tetrahedral Amorphous Carbon Thin-Film Electrodes*, Espinoza E.; Jarosova R.; Swain GM, ELECTROANALYSIS, 30 (2018) 1575-1582.
162. *Cross Comparison of TCP Conversion Coating Performance on Aluminum Alloys During Neutral Salt-Spray and Thin-Layer Mist Accelerated Degradation Testing*. Munson CA; McFall-Boegeman S; Swain GM, ELECTROCHIMICA ACTA, 282 (2018) 171-184.
161. *Role of Trivalent Chromium in the Anti-Corrosion Properties of a TCP Conversion Coating on Aluminum Alloy 2024-T3*, T K, Shruthi; Swain GM, JOURNAL OF THE ELECTROCHEMICAL SOCIETY 165 (2018) C103-C105.
160. *Analysis of Ag(I) Biocide in Water Samples Using Anodic Stripping Voltammetry with a Boron-Doped Diamond Disk Electrode*, Maldonado VY; Espinoza PJ; Rusinek CA; Swain GM. ANALYTICAL CHEMISTRY, 90 (2018) 6477-6485.
159. *Modulation of an Induced Charge Density Gradient in the Room Temperature Ionic Liquid BMIM⁺BF₄⁻*, Ma K; Jarosova R; Swain GM; Blanchard GJ. JOURNAL OF PHYSICAL CHEMISTRY C, 122 (2018) 7361-7367.
158. *Isatin Detection Using an All Boron-Doped Diamond 3-in-1 Macro Electrode and Micro Electrode Array*, Enschede M.; Maldonado VY; Rusinek CA; Swain GM; Rechenberg R; Becker MF; Wehring B, Schuelke T. ANALYTICAL CHEMISTRY 90 (2018) 1951-1958.
157. *Electrochemical Characterization of Different Variants of a Commercial Trivalent Chromium Process (TCP) Coating on Aluminum Alloy 7075-T6*, Munson CA; Zutim P; Swain GM. CORROSION 74 (2018) 50-65.
156. *Isatin Analysis Using Flow Injection Analysis with Amperometric Detection - Comparison of Tetrahedral Amorphous Carbon and Diamond Electrode Performance*, Jarosova R; Sanchez S; Haubold L; Swain GM. ELECTROANALYSIS 29 (2017) 2147-2154.
155. *Anti-Corrosion Properties of a TCP Pretreatment Conversion Coating on Aluminum Alloy 2024-T3 during Moist SO₂ Atmospheric Testing: Effects of Galvanic Coupling*, Whitman, B W.; Li, L; Swain, G M. JOURNAL OF THE ELECTROCHEMICAL SOCIETY 164 (2017) C135-C147.
154. *Effect of Galvanic Current on the Physicochemical, Electrochemical and Mechanical Properties of an Aerospace Carbon Fiber Reinforced Epoxy Composite*, Whitman BW; Miller D; Davis R; Brennan J; Swain GM. JOURNAL OF THE ELECTROCHEMICAL SOCIETY 164 (2017) C1-11.
153. *Structure and Chemical Composition of Different Variants of a Commercial Trivalent Chromium Process (TCP) Coating on Aluminum Alloy 7075-T6*, Munson CA; Swain GM. SURFACE and COATINGS TECHNOLOGY 315 (2017) 150-162.
152. *Structure, Electronic Properties, and Electrochemical Behavior of a Boron-Doped Diamond/Quartz Optically Transparent Electrode*, Wachter N; Munson C; Jarosova R; Swain GM. ACS APPLIED MATERIALS & INTERFACES 8 (2016) 28325 - 28337.
151. *Charge-Induced Long-Range Order in a Room-Temperature Ionic Liquid*, Ma K; Jarosova R; Swain GM; Blanchard GJ, LANGMUIR 32 (2016) 9507 – 9512.
150. *Assessment of Heterogeneous Electron-Transfer Rate Constants for Soluble Redox Analytes at Tetrahedral Amorphous Carbon, Boron-doped Diamond, and Glassy Carbon Electrodes*, Jarosova R; Bezerra DeSousa PM; Munson CA; Swain GM. PHYSICA STATUS SOLIDI A-APPLICATIONS AND MATERIALS SCIENCE 213 (2016) 2087-2098.

148. *Effects of Film Morphology and Surface Chemistry on the Direct Electrochemistry of Cytochrome c at Boron-Doped Diamond Electrodes*, Dai Y; Proshlyakov DA; Swain GM. ELECTROCHIMICA ACTA 197 (2016) 129-138.
147. *FOREWORD*. Swain GM; Rocha-Filho RC; Fatibello-Filho O. ELECTROCHIMICA ACTA 197 (2016) 126-128.
146. *Structure and Corrosion Performance of a Non-Chromium Process (NCP) Zr/Zn Pretreatment Conversion Coating on Aluminum Alloys*, Li L; Whitman BW.; Munson CA.; Matzdorf CA; Swain GM. JOURNAL OF THE ELECTROCHEMICAL SOCIETY 163 (2016) C718-C728.
145. *Evaluation of a Nitrogen-Incorporated Tetrahedral Amorphous Carbon Thin Film for the Detection of Tryptophan and Tyrosine using Flow Injection Analysis with Amperometric Detection*, Jarosova R; Rutherford J; Swain GM. ANALYST 141 (2016) 6031-6041.
144. *Electrochemical Detection of Peroxynitrite Using Hemin-PEDOT Functionalized Boron-Doped Diamond Microelectrode*. S. F. Peteu, B. W. Whitman, J. J. Galligan, G. M. Swain. ANALYST 141 (2016) 1796-1806.
143. *Nanocarbon Electrochemistry and Electroanalysis: Current Status and Future Perspectives*. N. Yang, G. M. Swain, X. Jiang, ELECTROANALYSIS 28 (2016) 27-34. (Guest Editor for a special issue "Nanocarbon Electrochemistry and Electroanalysis").
142. *Forward "Nanocarbon on Electrochemistry and Electroanalysis"*. ELECTROANALYSIS 28 (2016) 2.
139. *Aliphatic Polyamine Oxidation Reaction Mechanism at Boron-Doped Microcrystalline and Ultrananocrystalline Diamond Electrodes*. Witek M; Swain GM. ELECTROANALYSIS (Special Issue) 28 (2016) 151-160.
138. *Sex-related Differences in Small Intestinal Transit and Serotonin Dynamics in High Fat Diet-induced Obesity in Mice*. France M; Skorich E; Kadrofske M; Swain GM; Galligan JJ. EXPERIMENTAL PHYSIOLOGY, 101 (2016) 81-99.
137. *Macrophage Depletion Lowers Blood Pressure and Restores Sympathetic Nerve α 2-Adrenergic Receptor Function in Mesenteric Arteries of DOCA-salt Hypertensive Rats*. Thang L.; Demel S; Crawford R; Kaminski N; Swain GM, van Rooijen N; Galligan JJ. AMERICAN JOURNAL OF PHYSIOLOGY 309 (2015) H1186-197.
136. *The Performance of a Nitrogen-Containing Tetrahedral Amorphous Carbon Electrode in Flow Injection Analysis with Amperometric Detection*. Hamblin D; Qiu J; Haubold L; Swain GM. ANALYTICAL METHODS 7 (2015) 4481-4486.
135. *Rapid Preparation of Room Temperature Ionic Liquids with Low Water Content as Characterized with a ta-C:N Electrode*. Jarošová R; Swain GM. JOURNAL OF THE ELECTROCHEMICAL SOCIETY 162 (2015) H507-H511.
134. *Synthesis of Nitrogen-Doped Carbon Nanotubes Using Injection-Vertical Chemical Vapor Deposition: Effects of Synthesis Parameters on the Nitrogen Content*, Hachimi A; Merzougui B; Hakeem A; Swain GM; Chang QW; Shao MA; Atieh MA. JOURNAL OF NANOMATERIALS Article Number: 453725 (2015) 9 pages.
133. *A Pt-free Electrocatalyst Based on Pyrolyzed Vinazene-Carbon Composite for Oxygen Reduction Reaction*. Akinpelu A; Merzougui B; Bukola S; Azad AM; Basheer RA; Swain GM; Chang QW; Shao MA. ELECTROCHIMICA ACTA 161 (2015) 305-311.

Book Chapters

1. G. M. Swain, *Electroanalytical Applications of Diamond Electrodes*, in Thin Film Diamond II, C. Nebel and J. Ristein, eds., **2004**, Chap. 4, pp.121-148.
2. G. M. Swain, *Electrically Conducting Diamond Thin-Films: Advanced Electrode Materials for Electrochemical Technologies*, in Electroanalytical Chemistry, A. J. Bard and I. Rubinstein, eds., Marcel Dekker, Inc., **2004**, Vol. 22, pp. 182-277.
3. D. Knigge, P. Kaur and G. M. Swain, *Recent Trends in the Chemical Modification of sp^2 and sp^3 Bonded Carbon Electrodes*, in Encyclopedia of Electrochemistry, A.J. Bard and M. Stratmann, eds., Wiley-VCH, **2007**, Vol. 10, pp. 236-260.
4. G. M. Swain, *Pretreatment and Activation of Solid Electrode Materials*, in Handbook of Electrochemistry, C. G. Zoski, ed., Elsevier, **2007**, pp. 111-150.

Extramural Funding at MSU (2000-present)

Research in the group has been continuously supported over the years by DOE, NSF, NIH, DoD, USDA and NASA. Total funding to date is **\$7,399,570**. In addition to serving as PI and co-PI on multiple research grants continuously over the period, I direct an NSF REU program in the Department of Chemistry, and I serve as a faculty mentor on several training grants across campus:

Training Grants and REU Programs

REU (NSF), *Neuronal Structure and Function*, 2015-2018. PI = William Atchison (Pharm/Tox). This is a partnership between MSU and two campuses of the University of Puerto Rico, Cayey (UPR-C) and Arecibo (UPR-A).

T32 (NIH/PHS), *Interdisciplinary Training Program in Neuroscience*, 2008-2016. PI = Cheryl Sisk (Neuroscience Program).

REU (NSF), *Bridge to the Ph.D. in Neuroscience*, 2015-2018. PI = William Atchison (Pharm/Tox). This is a partnership between MSU and two campuses of the University of Puerto Rico, Cayey (UPR-C) and Arecibo (UPR-A).

R25 (NIH/GMS), *MSU PREP: Increasing Underrepresented Minority Representation in Biomedical Sciences*, 2016-2021. PI = William Atchison (Pharm/Tox).

R25 (NIH-HLBI), *Biomedical Research for University Students in the Health Sciences*. PIs = Susan Ewart and Vilma Yuzbasiyan-Gurkan, 2018-2021 (College of Veterinary Medicine).

High School Honors Science Program (HSHSP), MSU, 2008-2019.

Pending Grant Applications

ONR (revised)

Non-Chromate Surface Pretreatments and Primers for Corrosion Control of Aerospace Aluminum Alloys – Early-Stage Failure and Performance Enhancement

PI = Greg Swain

Period = 10/01/19 – 09/30/22

Total = \$485,892

NSF – Material Engineering Processing (revised)

Laser Cleaning and Texturing of Advanced Aerospace Metal Alloys: Effects on Corrosion Resistance, Mechanical Strength and Coating Adhesion

PI = Greg Swain

Period = 06/01/20 – 05/31/23

Total = \$395,859

NSF – Chemistry Division
The Electrochemical Properties and Electroanalytical Applications of Tetrahedral Amorphous Carbon Thin-Film Electrodes
PI = Greg Swain
Period = 04/01/20 – 03/31/23
Total = \$521,598

Current Funding

College of Medicine – SEED Grant (MSU)
Next Generation Exhaled Breath Analyzer for Nitric Oxide and Peroxynitrite
PI = Greg Swain
co-PI = Borys Hrinchenko (CHM)
Period = 12/4/2018 - 12/4/2019
Total = \$10,000
Status = Funded GS100060-C5BHS

NIH – DDK (1R01DK121272-01A1)
Identification of Enteric Nerve Circuits Controlling Gut Motility
PI = James Galligan
co-PIs = Frederic Manfredsson and Greg M. Swain
Period = 09/17/19 – 06/30/24
Total = 1,899,074
Status = Funded RC110730

DOE/Honeywell
Assessment of the Corrosion Resistance and Root-Cause Failure Mechanisms of Anodized Aluminum Alloys Sealed with Trivalent Chromium Process Conversion Coatings
PI = Greg Swain
Period = 10/1/17 – 12/31/19 (no-cost continuation at present)
Total = \$50,000
Status = Funded RC108160

NSF (Designing Materials to Revolutionize and Engineer our Future)
DMREF: Doping and Defects in Diamond for Electronics
PI = Tim Grotjohn (Elect. Engr.)
co-PIs = Greg Swain, Tim Hogan (Elect. Engr.), Thomas Schuelke (Elect. Engr.), John Albrecht (Elect. Engr.)
Period = 10/01/16 – 09/30/20
Total = \$1.0 M
Status = Funded RC106552

NSF (CHE-1851776)
REU Site: Cross-Disciplinary Training in Sustainable Chemistry and Chemical Processes
PI = Greg Swain
co-PI = Rob LaDuca
Period = 03/15/19 – 02/28/22
Total Budget = \$288,058
Status = Funded RC109469 and RC109611

Army Research Office (W911NF-12-R-0011-04)
Spectroelectrochemical Studies of Redox Reactions and Electrified Interfaces at Nanostructured Carbon Electrodes in RTILs
PI = Greg M. Swain
co-PI = Gary Blanchard
Period = 03/15/19 – 02/28/22

Total Budget = \$499,448
Status = Funded RC109611

Patents

1. D. M. Gruen, O. H. Auciello, J. A. Carlisle, G. M. Swain and M. Ding, "Electrode and Electron Emission Applications for N-Type Nanocrystalline Materials", WO 02/31891 A1 (18.04.2002).
2. G. M. Swain and J. Wang, "Electrically Conductive Polycrystalline Diamond and Particulate Metal-Based Electrodes", U.S. 6,884,290 (April 2005).
3. G. M. Swain, Y. Show, P. Sonthalia and M. Witek, "Boron-Doped Nanocrystalline Diamond", U.S. 7,144,753 (May 2006).
4. G. M. Swain, A. Fischer, J. Bennett and M. Lowe, "Electrically Conducting Diamond Electrodes", US 7,534,296 (May 2009).
5. G. M. Swain, S. Peteu and B. Hrinczenko, "Sensing electrode for detecting nitric oxide and peroxydinitrate, comprises electrically conducting substrate, electrically conducting boron-doped diamond layer over electrically conducting substrate, metallic nanoparticles", Patent Application No. US2018217087-A1 (February 2018).

Collaborators: Prof. William Atchison (MSU), Dr. Xiaochun Bian (MSU), Prof. Gary Blanchard (MSU), Dr. John Brennan (NAVAIR), Prof. Rudy Buchheit (OSU), Dr. James E. Butler (NRL), Prof. Rob Carpick (Univ. of Penn), Prof. Larry Drzal (MSU), Prof. Yasauki Einaga (Keio Univ.), Prof. Orlando Fatibello-Filho (UFSCar), Prof. Gerald Frankel (OSU), Prof. Greg D. Fink (MSU), Prof. James J. Galligan (MSU), Prof. Tim Grotjohn (MSU), Dr. Dieter M. Gruen (ANL), Dr. Christof Nebel (Fraunhofer, Germany), Dr. Andreas Lasagni (Fraunhofer, Germany), Mr. Craig Matzdorf (NAVAIR), Prof. Richard McCreery (Univ. of Alberta), Mr. Dan Miller (NAVAIR), Dr. Bhavik Patel (Univ. of Brighton, UK), Prof. Marc Porter (Univ. of Utah), Mr. Scott Porter (US ARMY-TARDEC), Dr. Denis Proshlyakov (MSU), Prof. Romeu Rocha-Filho (UFSCar), Dr. Thomas Schuelke (Fraunhofer, MSU), Prof. Tom Voice (MSU) and Prof. Jerzy Zak (STU, Poland).

Mentored Graduate Students: S. Alehashem (M.S. 1999), J. Xu (Ph.D. 1999), M. C. Granger (Ph. D. 1999), Q. Chen (Ph.D. 2000), J. Wang (Ph.D. 2002), S. Haymond (Ph.D. 2002), M. Witek (Ph.D. 2002), M. Hupert (Ph.D. 2002), G. Pimienta (M.S. 2004), J. Stotter (Ph.D. 2004), P. Sonthalia (Ph.D. 2004), G. Muna (Ph.D. 2005), A. Fischer (Ph.D. 2005), J. Bennett (Ph.D. 2006), J. Park (Ph.D. 2006 – joint with James Galligan), Yang Song (Ph.D. 2006), L. Schaeffer (M.S. 2007), Y. Dai (M.S. 2007), E. McGaw (Ph.D. 2007), S. Wang (Ph.D. 2008), Y. Dai (Ph.D. 2009), H. Dong (Ph.D. 2009 – joint with James Galligan), D. Knigge (M.S. 2009), A. Ay (Ph.D. 2010), V. Swope (Ph.D. 2010), X. Yang (Ph.D. 2012), M. Fhaner (Ph.D. 2012), L. Li (Ph.D. 2013), J. Jakupovic (Ph.D. 2013 – joint with James Galligan), M France (Ph.D. 2015 – joint with James Galligan), Catherine Munson (Ph.D. 2017), Brandon Whitman (Ph.D. 2018), Romana Jarošová (Ph.D. 2019) and Kirti Bhardwaj (Ph.D. 2019).

Postdoctoral Researchers and Visiting Research Scientists: Dr. Tedd E. Lister (1996-97), Karolina Pecková (2004-2005), Dr. Veronika Mocko (2003-2007), Dr. Ahiua Liu (2006-2007), Prof. Jerzy Zak (2000, 2001, 2005, 2007), Dr. Isao Sasaki (2006-2007), Dr. Josef Cvacka (2001-2002), Dr. Bhavik Patel (2006-2007), Dr. Yoshiyuki Show (2001-2004), Dr. Martin Novotny (2005-2008), Dr. Jesse Seegmiller (2004-2005), Dr. Dasa Babankova (2006-2008), Dr. Liang Guo (2007-2010), Dr. Doo Young Kim (2008-2011), Dr. Hong Zhou (2008 - 2011).

Personal Information

- Married for 30 years (Cindy Swain)
- Children: Garrett (28), Jack (25), Jenna (22)
- Active in volunteer activities: Advent House, Lansing MI