

Anna N. Davis

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EDUCATION

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| Vanderbilt University , Nashville, TN
<i>PhD anticipated 2019</i> | 2019 |
| University of North Georgia , Dahlonega, GA
<i>Bachelor of Science, Chemistry; Mathematics Minor</i> | 2013 |
| Georgia Perimeter College , Atlanta, GA
<i>Associate of Arts, Mathematics</i> | 2011 |

RESEARCH EXPERIENCE

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| Vanderbilt University , Nashville, TN
<i>Advisor: Dr. David E. Cliffel</i> <ul style="list-style-type: none">Fabricated a new nanoelectrode array for monitoring cellular bioenergetics, integral signaling ions, and conductivity changes due to evaporation in submicroliter volumesDeveloped a method for the detection of evaporation from complex samples using alternating current voltammetry (ACV)Implemented Automation with Vanderbilt Institute of Integrative Biosystems Research and Education (VIIBRE) pumps, valves, and Ampere software triggering of electrochemical measurementsWrote an Excel Macro capable of prompting user input of testing parameters, writing macros for iterations of multiple electrochemical techniques with a CH Instrument Potentiostat, compiling data from text files produced from each run, and automated data analysis including calibration curve and evaluation of unknowns | 2013-Present |
| University of North Georgia , Dahlonega, GA
<i>Advisor: Dr. Royce Dansby-Sparks</i> <ul style="list-style-type: none">Developed a spectroelectrochemical sensor for selective indirect detection of trace amounts of chromium (IV)Made an inexpensive apparatus for consistent isolation of electrode areas | 2012-2013 |

SPECIAL SKILLS

- Electrochemistry**
sensor design, amperometry, voltammetry, alternating current voltammetry, electrodeposition, electropolymerization, enzyme sensors, enzyme, microfabricated electrodes, screen printed electrodes, conductivity
- Programming**
Excel macros (Visual Basic), CH Instrument Macros, R, Mathematica, Dreamweaver(HTML), Microsoft Expression (HTML)
- Analytical Instrumentation**
ICP-OES, Polarimetry, UV-Vis, HPLC, CE, GCMS
- Microfluidics**
Labsmith, 150 μ m ID-1/16" tubing, automation, uProcess, Ampere (automation software simultaneously controlling multiple pumps, valves, and external potentiostat triggering),
- Microfabrication**
clean room training, profilometry, AutoCAD, electron beam deposition, thermal evaporation deposition, soft lithography, SU8, PDMS, Ion milling, materials printing
- Cell Culture**
Cell Line Maintenance for research, specifically seeding, splitting, and plating; liposome transfection; assays verifying protein expression
- Miscellaneous**
Microsoft Office Suite, KaleidaGraph, SIMION

PROFESSIONAL MEMBERSHIPS

- American Chemical Society (Since 09/2011)
- Analytical Chemistry Section of ACS (Since 09/2014)
- Electrochemical Society (Since 02/2015)
- Society for Electroanalytical Chemistry

TEACHING EXPERIENCE

Vanderbilt University, Nashville, TN

Teaching Assistant– Analytical Chemistry Lab, General Chemistry Lab

Teaching Fellow– General Chemistry Recitation

2013-2014, 2017

2016-2017

University of North Georgia, Dahlonega, GA

Supplemental Instruction Facilitator– General Chemistry

Teaching Assistant– General Chemistry

2013

2012

PUBLICATIONS

- McKenzie, J.R.; Cognata, A.C.; Davis, A.N.; Wikswo, J.P.; Cliffel, D.E. "Real-Time Monitoring of Cellular Bioenergetics with a Multi-Analyte Screen-Printed Electrode" *Analytical Chemistry*, **2015**, 87 (15), 7857-7864.
 - Davis, A.N.; Travis, A.R.; Miller, D.R; Cliffel, D.E. Multianalyte Physiological Microanalytical Devices Annual Review of Analytical Chemistry 2017, 10, 93-111.
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CONFERENCE ORAL PRESENTATIONS

- **2016** PittCon, Atlanta, GA
"The Development of an Automated NanoElectrode Array Sensor to Detect Evaporation and Changes in Cellular Bioenergetics in a Submicroliter Chamber from an Organ-on-a-Chip System"
 - **2015** SERMACS, Memphis, TN
"The development of a microfluidic conductivity sensor to detect evaporation from gas permeable PDMS organ-on-a-chip devices"
 - **2015** PittCon, New Orleans, LA
"Electrochemical Analysis of Metabolic Flux in Nanoliter Samples from Organ-on-a-Chip Systems"
 - **2014** SERMACS, Nashville, TN
"Electrochemical analysis of glucose metabolism from nanoliter biological samples"
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CONFERENCE POSTER PRESENTATIONS

- **2015** Nanoscience and Nanotechnology Forum, Nashville, TN
"NanoElectrode Array Designed to Monitor Cellular Bioenergetics and Evaporation for Organ-on-a-Chip Systems"
 - **2014** Vanderbilt Institute of Chemical Biology Symposium, Nashville, TN
"Fabrication of Biosensors to Observe Metabolic Flux in Organ-on-a-Chip Systems"
 - **2013** 245th ACS National Meeting, New Orleans, LA
"Indirect optical and electrochemical detection of trace metals at electrodeposited sol-gel films"
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AWARDS

- North Georgia Society of Chemistry Students Award **2013**
 - Vanderbilt Institute of Chemical Biology Fellowship **2013-2014**
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REFERENCES

- **Dr. David E. Cliffel**
Professor of Chemistry, Deputy
Director of VIIBRE
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(615)343-3937
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- **Dr. John A. McLean**
Professor of Chemistry, Deputy
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- **Dr. John P. Wikswo**
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