CURRICULUM VITAE

NIKOLAY G DIMITROV, PH.D.

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NIKOLAY G DIMITROV, PH.D.

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GENERAL

EDUCATION

- ***PhD in Chemistry, 1993***. Department of Electrocatalysis and Electrocrystallization, Central Laboratory of Electrochemical Power Sources, Bulgarian Academy of Sciences, Sofia, Bulgaria.
  PhD Dissertation: *Transformation processes in UPD lead adsorbate on electrolytically grown Ag (111) faces.*
- ***M.S. in Chemistry, 1987***. Department of Chemistry, Sofia University "St. Kliment Ohridski", Sofia, Bulgaria.

PRESENT APPOINTMENT

- ***Professor,*** Department of Chemistry, Binghamton University - State University of New York, Binghamton, New York, ***2014 – Present***

  Currently Funded Projects:

  PI: (i) SRC-CHIRP, Task 2878.011: *Fine Pitch Cu-Sn based Interconnection Below Temperatures of 180C*; (ii) IEEC-BU & NYSTAR*: Understanding and Preventing Voiding in Small Ni-Sn Joints Through Design and Process Control*.

  Co-PI: SRC-CHIRP, Task 2878.005 "Alternative Fine Pitch Interconnect Technologies for SiPs"; (ii) IEEC-BU & NYSTAR*: Bi Migration in Sn-Bi Low-temperature Solder*.

PAST APPOINTMENTS

- ***Associate Professor,*** Department of Chemistry, Binghamton University - State University of New York, Binghamton, New York, ***2009 – 2014***
- ***Assistant Professor,*** Department of Chemistry, Binghamton University - State University of New York, Binghamton, New York, ***2003 – 2009***
- ***Research Assistant Professor - 2001 – 2003***, Department of Mechanical and Aerospace Engineering, Arizona State University, Tempe, Arizona,
- ***Research Associate, 1999 – 2001,*** Department of Mechanical and Aerospace Engineering, Arizona State University, Tempe, Arizona,
- ***Postdoctoral Associate, 1996 – 1998,*** Department of Mechanical and Aerospace Engineering, Arizona State University, Tempe, Arizona,

- ***Senior Research Scientist, 1993-1995***. Department of Electrocatalysis and Electrocrystallization, Central Laboratory of Electrochemical Power Sources (CLEPS), Bulgarian Academy of Sciences, Sofia, Bulgaria.
- ***Research Scientist, 1987-1992***. Department of Electrocatalysis and Electrocrystallization, CLEPS, Bulgarian Academy of Sciences, Sofia, Bulgaria.

VISITING POSITIONS

- Southwest University "St. Neofit Rilski", Blagoevgrad, Bulgaria, Department Chemistry, (1993 – 1995)
- Sofia University "St. Kliment Ohridski", Sofia, Bulgaria, Chemistry Dept, Summer, (1994 – 1995)

PROFESSIONAL SOCIETY AFFILIATIONS

- The Electrochemical Society (ECS)
- American Chemical Society (ACS)
- International Society of Electrochemistry (ISE)

AWARDS

- SUNY ***Chansellor's Award for Excellence in Research and Creative Activities*** (2023)
- The Electrochemical Society, ***Annual Award of the Electrodeposition Division*** (2022)
- ACS, *Binghamton Local Section*, ***Outstanding Researcher*** *(2020)*
- ACS, *Binghamton Local Section*, ***Outstanding Service Award*** *(2014)*.
- *NSF* - ***CAREER Award*** *(2008)*.
- The Award of CLEPS, Bulgarian Academy of Sciences, ***Best Yearly Achievements*** *(1994)*.

RESEARCH

RESEARCH INTERESTS

- **Kinetic and Thermodynamic Aspects of Thin Film Growth**
  (2008-2014, NSF-CAREER Award; 2014, NSF, Chemistry Program)

The main target of this research is to learn how to manipulate growth parameters such that layer-by-layer or self-organized islanding growth becomes the kinetically preferred growth mode. Earlier work led to the development of new approaches to electrodeposition that produce atomically flat heteroepitaxial overlayers of quality similar to that obtained by ultra high vacuum techniques at elevated temperature. In one approach that we term electrochemical *defect-mediated growth* the metal of interest is co-deposited with a reversibly deposited mediator metal. This work was published in the journal *Science* 1999. In another approach called *surfactant-mediated growth*, we employ a pre-deposited monolayer fraction of surfactant that floats on the surface of the depositing metal. Most recently, a long-term research activity was established aimed at realizing multistep redox replacement for the growth of epitaxial metal films and multilayers of different metals and/or alloys. A "proof-of-concept" study initiated the

development of *a new thin film growth method* realizing a surface limited redox replacement *as an elementary step*. While similar approaches have been used recently for sub-monolayer to a monolayer surface modification, *the new outcome that warrants the innovative aspect of our study is associated with the application of this strategy for metal thin film deposition*. This method is now being applied for the growth of thin metal films and/or multilayers of Ag, Cu and Pt by at least four research groups in the USA.

- **Electrochemical Processing of Nanoscale Materials for Catalysis & Sensors**
  (2006-2010, funded by NSF-DMR; 2013-2017 funded by NSF-Chemistry)

De-alloying is a solid-state separation process in which a selective dissolution serves for removal of the most electrochemically active constituent of an alloy. This process results in the formation of a nanoporous sponge composed almost entirely of the more-noble alloy constituent(s). Earlier results summarizing the progress of the analytical, simulation and experimental work on this subject were reported in *Nature* (2001) magazine. *In a recently proposed research,* de-alloying approaches along and controlled cementation are employed in the design of porous structures at nanometer length scale. In this research understanding the role of different factors controlling the porous structure is strongly emphasized. Key points of interest are associated with both, the transition from nucleated clusters/ligaments to 3D porosity structure with a defined length scale and the limitations in the growth evolution of the porous layer in vertical direction. More recently an interesting synergism between this research trust and the thin film growth one led to a new direction of our group's activities associated with the development of potent catalysts for fuel cell applications. Those catalysts, developed on nanoporous Au layer constitute an alternative to nanoparticulate catalysts. Early testing in the formic acid oxidation demonstrated remarkable activity and satisfactory stability of catalyst prototypes synthesized accordingly in a proof-of-concept activity.

- **Development of Optimized Electrodeposition Strategies for Improved Packaging Reliability**
  (*funded yearly by NY STAR through IEEC-Binghamton since 2005-2021*)

The development of Cu electroplating technologies demonstrated throughout the years that a viable electroplating bath would mandatory contain chloride ions and organic additives that facilitate the plating of Cu suitable for fabrication of high reliability interconnect structures. Solder joints coupling these interconnect structures have been considered to be highly reliable for decades, but the advent of Pb-free solder and higher processing temperatures has revealed that Cu/solder joints are susceptible to premature failure under shock loading. This failure is associated with void formation at the Cu/solder intermetallic compound interface. Proprietary work pointed to void nucleation being facilitated by specific and yet unidentified impurities incorporated into electroplated Cu. Using Cu produced through careful laboratory scale electroplating experiments, we have shown the void growth to be directly correlated with plating parameters. Our recent efforts have ascertained that we can consistently control electroplating baths in lab environment so as to vary the degree of voiding in subsequently soldered and annealed samples. More recently we make step ahead with successfully scaling our plating experiments. We also found a clear relationship between the voiding propensity and the growth overpotential. Most recently a correlation was established between the potential of zero charge of different copper faces and possible preferential incorporation of impurities during the Cu deposition. In addition to that, different scenarios with solution aging helped understanding better the effect of additive decomposition on the voiding propensity in solder joints.

- **Analytical Approaches Based on Surface Electrochemistry**

In earlier developments the unerpotential deposition in the systems $Cu^{2+}/Ag_xAu_{(1-x)}$ (111), $Ag^{+}/Cu_xAu_{(1-x)}$ (111) and Pb^{2+}/Cu-Al poly was investigated as a function of the alloy composition. A linear dependence of the upd coverage on the composition was found in the case of ideal separation of the alloying constituents. A power law function was found to describe the upd as a function of the alloy composition in the case of a randomly mixed alloy. These findings were successfully applied as an analytical tool for determining the alloy composition of the investigated substrates. Most recently, ongoing research realizes simultaneously taking place nitrate electroreduction and metal UPD on Cu substrates for the development of an accurate and high-sensitivity technique for analysis and monitoring of metal content in natural waters. A quantitative study and modeling work shed light on such scenario taking place on Cu(111) electrode at open circuit potential. Similar approach is now being considered for analysis of trace amounts of Tl and Sn. Also an ongoing research is focused on the quantitative development of a method determination of surface area on porous metal substrates. Similarly, to the gas-phase BET method, this approach takes advantage of the surface limited nature of the UPD process leading to the formation of exactly one monolayer of foreign metal. The new method results are thus obtained by comparison of UPD coverage on high-surface area flat metal surfaces. Ongoing research is aimed at exploring the quantitative aspects of the new method. The nature of substrate, the transport limitations through the porous structure and the decoupling between double-layer charging/discharging and UPD effects are studied as limiting factors in that method development.

- **Development of Optimized Strategies for the Design of Lithium-Air Batteries (*funded by NYSERDA, 2011-2013*)**

The persistent dendrite formation on the Li anode surface during the charging-discharging cycles of Li-air batteries has been a challenge. This results in poor cycling and safety performance. In electrodeposition of metals dendrites are associated with diffusion limitations that become a key factor as the current density increases above 80% of the diffusion limiting value. However, recent work carried out in a microfluidic test cell demonstrates dendrite-prone Li deposition scenarios well beyond the most immediate diffusion limitations. Thus, the exact reason for the dendritic growth during Li deposition remains generally unclear. It is believed that one possible reason could be associated with non-uniformity of the composition and thickness of the so-called solid electrolyte interface (SEI) that forms immediately upon contact between Li and electrolyte and consists of electrolyte reduction products that accumulate along with the Li deposition. The condition of the Li electrode substrate is also considered as a factor controlling the nucleation of dendrites. To address the anodic challenge is not a trivial task as in the charging step not only Li+ ions deposit onto the anode but also Li_2O_2 and/or Li_2O decompose at the cathode to generate O_2 and free Li^+ ions. Thus, we must understand the mechanism of the entire redox cell activity in the charging/discharging cycle to design the appropriate electrocatalyst. In the very early stages of our work, we will identify the electrolytes that are not only best in covering the wide variety of factors controlling the nucleation and growth of dendrites during Li. In another part of our activity, we will be looking for substrates and appropriate setups for fundamentally studying the Li/Li^+ interface.

FUNDING AND SUPPORT

Current Funding

- **Integrated Electronics Engineering Center (IEEC – NY-STAR**),
  Corrosion in Additive Manufacturing Printed Silver Films, ***July 2023– June 2024***;
  Single PI: **$25,000**

- **Active collaboration (about 25-30% contribution) with Peter Borgesen (SSE – SUNY Binghamton) on SRC, CHIRP 2878.012** ***January 2023-December 2025***
  Co PI: total of **$300,000**

Past Funding

- **Semiconductor Research Corporation (SRC); CHIRP Task 2878.011, Fine Pitch Cu-Sn based Interconnection Below Temperatures of 180C,** ***January 2020 – December 2022***
  Single PI: **$300,000**

- **NATIONAL SCIENCE FOUNDATION (NSF) – Division of Chemistry**,
Award CHE-1310297; ***September 2013 – September 2018***;
  Single Investigator: **$324,000**

- **NATIONAL SCIENCE FOUNDATION (NSF) – Division of Materials Research**,
Early CAREER Development – Award # 0742016; ***April 2008 – March 2014***;
  Single Investigator: **$412,000**

- **NEW YORK STATE ENERGY RESEARCH DEVELOPMENT AUTHORITY (NYSERDA)**
Lithium Air Batteries; ***May 2011 – December 2013***
  Co-PI with CJ Zhong: **$200,000**

- **NEW YORK STATE ENERGY RESEARCH DEVELOPMENT AUTHORITY (NYSERDA)**
Environmentally Preferred Power Systems Technologies ***July 2011 – June 2014***
  Co-PI with B. White and P. Borgesen: **$250,000**

- **NATIONAL SCIENCE FOUNDATION (NSF) – Division of Materials Research**,
Materials World Network – Award # 0603019; ***July 2006 – June 2009***;
  Single Investigator: **$255,000**

- **IEEC – SUNY Binghamton (through NYSTAR)**,
Glass Interposers V, ***July 2019 – June 2020***;
  Single Investigator (Systems Engineering, SUNY Binghamton) **$25,000**

- **IEEC – SUNY Binghamton (through NYSTAR)**,
Glass Interposers V, ***July 2019 – June 2020***;
  Co-PIs with Eric Cotts (Department of Physics, SUNY Binghamton) **$50,000**

- **IEEC – SUNY Binghamton (through NYSTAR)**,
Glass Interposers V, ***July 2016 – June 2017***;
  Single Investigator (Systems Engineering, SUNY Binghamton) **$60,000**

- **IEEC – SUNY Binghamton (through NYSTAR)**,
Glass Interposers V, ***July 2015 – June 2016***;

Single Investigator (Systems Engineering, SUNY Binghamton) **$60,000**

- **IEEC – SUNY Binghamton (through NYSTAR)**,

Glass Interposers IV, ***July 2014 – June 2015***;
Single Investigator (Systems Engineering, SUNY Binghamton) **$60,000**

- **IEEC – SUNY Binghamton (through NYSTAR)**,

Glass Interposers III, ***July 2013 – June 2014***;
PIs with Peter Borgesen (Systems Engineering, SUNY Binghamton) **$60,000**

- **IEEC – SUNY Binghamton (through NYSTAR)**,

Glass Interposers II, ***July 2012– June 2013***;
PIs with Peter Borgesen (Systems Engineering, SUNY Binghamton) **$60,000**

- **IEEC – SUNY Binghamton (through NYSTAR)**,

Glass Interposers I, ***July 2011 – June 2012***;
PIs with Peter Borgesen (Systems Engineering, SUNY Binghamton) **$60,000**

- **Integrated Electronics Engineering Center (IEEC – SUNY Binghamton**),

Sporadic Failures of Solder Joints on Electroplated Pad Finishes, ***July 2009 – June 2010***;
PIs with Eric Cotts Co-PI (Department of Physics, SUNY Binghamton) **$50,000**

- **Integrated Electronics Engineering Center (IEEC – SUNY Binghamton**),

Grant on ***Study of the Effect of Sn Plating Parameters on: Sn film Stress, Sn film Microstructure and Sn film Propensity for Forming Sn Whiskers***, ***July 2009 – June 2010***;
Co-PIs with Eric Cotts (Department of Physics, SUNY Binghamton) **$60,000**

- **Integrated Electronics Engineering Center (IEEC – SUNY Binghamton**),

Grant on ***Understanding, Controlling and Improving Electrodeposition in the Microelectronics Industry***, ***July 2008 – June 2009***;
Co-PIs with Eric Cotts (Department of Physics, SUNY Binghamton) **$60,000**

- **Integrated Electronics Engineering Center (IEEC – SUNY Binghamton**),

Grant on ***Factors Controlling the Voiding in Solder Joints***, ***July 2007 – June 2008***;
Co-PIs with Eric Cotts (Department of Physics, SUNY Binghamton) **$83,000**

- **Integrated Electronics Engineering Center (IEEC – SUNY Binghamton**),

Grant on ***Voiding at Cu-Sn Interface***, ***July 2006 – June 2007***;
Co-PIs with Eric Cotts (Department of Physics, SUNY Binghamton) **$35,000**

- **Integrated Electronics Engineering Center (IEEC – SUNY Binghamton**),

Exploratory grant on ***Strategies for Continuous Solder Joints***, ***July 2005 – June 2006***;
Single Investigator: **$15,000**

- **Research Foundation at SUNY**

Startup Funds (Various Projects), ***September 2003 – June 2006***;
Single Investigator: **$170,000**

PUBLICATIONS (PEER REVIEWED)

Review, Special Articles and Book Chapters

- MINI REVIEW ARTICLE - E. Castillo, M. Njuki, A.F. Pasha, and N. Dimitrov, Copper-Based Nanomaterials for Fine-Pitch Interconnects in Microelectronics, ***Accounts of Chemical Research***, **2023**, 56 1384 -1394 (https://doi.org/10.1021/acs.accounts.3c00023).
- FEATURED ARTICLE - Nikolay Dimitrov, Innocent Achari, and Stephen Ambrozik, Palladium Ultrathin Film Growth by Surface Limited Redox Replacement of Cu and H UPD Monolayers: Approaches, Pros, Cons, and Comparison, ***The Electrochemical Society INTERFACE***, **2018**, 27(2), 65-69.
- *REVIEW PAPER* - **Nikolay Dimitrov**, Recent Advances in the Growth of Metals, Alloys, and Multilayers by Surface Limited Redox Replacement (SLRR) Based Approaches, ***Electrochimica Acta***, **2016**, *209*, 599-622
- *Chapter 27* - Modern Electroplating V, editors: M. Paunovic and M. Schlesinger, John Willey and Sons, Inc (2010). Applications to Magnetic Recording and Microelectronic Technologies, S.R. Brankovic, N. Vasiljevic, **N. Dimitrov**

List of Publications

(2013 – Present, *as Full Professor*)

1. NEW E. Castillo, A.F. Pasha, Z. Larson, and N. Dimitrov, New Generation Copper-based Interconnection From Nanoporous CuSn Alloy Sintered at Low Temperastures, ***Materials Advances***, **2024**, (DOI: 10.1039/d3ma01071f)
2. NEW Z. Lei, P. Borgesen, and N. Dimitrov, Electrodeposition Complexity and the Root-Casuse of Interfacial Voiding with Plated Nickel, ***ACS Applied Electronic Materials***, **2024**, 6(1) 457-464, (https://doi.org/10.1021/acsaelm.3c01455)
3. E. Castillo, J. Zhang, and **N. Dimitrov**, Electrodeposition of Cu-Mn Films as Precursor Alloys for the Synthesis of Nanoporous Cu, ***MRS Bulletin***, **2022**, *47 (9)* available online, (DOI: 10.1557/s43577-022-00323-4).
4. M. Njuki, S. Thekkut, R. Sivasubramony, C.M. Greene, N. Shalane, P. Thompson, K. Mirpuri, P. Borgesen, and **N. Dimitrov**, Enhanced voiding in Cu-Sn micro joints, ***Materials Research Bulletin***, **2022**, 150, 111759-111766.
5. M. Njuki, S. Thekkut, R. Das, N. Shahane, P. Thompson, K. Mirpuri, P. Borgesen, and **N. Dimitrov,** Understanding and Preventing Cu-Sn Micro Joint Defects Through Design and Process Control, ***Journal of Applied Electrochemistry***, **2022**, 52, 259-271.
6. E. Castillo and **N. Dimitrov**, Electrodeposition of Cu-Mn Films as Precursor Alloys for the Synthesis of Nanoporous Cu, ***Electrochem***, **2021**, 2, 520–533.
7. E. Castillo and N. Dimitrov, Electrodeposition of Zn-rich CuxZn(1-x) Films with Controlled Composition and Morphology, ***Journal of the Electrochemical Society***, **2021**, 168, 062513.
8. Y. Xie, C. Li, E. Castillo, J. Fang, and **N. Dimitrov**, Facile Synthesis of Nanoporous Au-Cu-Pt Alloy as Superior Catalyst for Methanol Oxidation Reaction, ***Electrochimica Acta*** **2021**, 385, 138306.
9. E. Castillo, Y. Xie, and N. **Dimitrov**, Filling in Nanoporous Gold with Silver via Bulk Deposition and Surface Limited Redox Replacement, ***Electrochimica Acta***, **2021**, 380, 138196.
10. Y. Xie, Y. Yang, D.A. Muller, H.D. Abruña, **N. Dimitrov**, and J. Fang, Enhanced ORR Kinetics on Au-Doped Pt−Cu Porous Films in Alkaline Media, ***ACS Catalysis***, **2020**, *10*, 9967–9976
11. I. Achari and **N. Dimitrov**, *Ultrathin Film PtxPd(1-x) Alloy Catalysts for Formic Acid Oxidation Synthesized by Surface Limited Redox Replacement of Underpotentially Deposited H Monolayer*, ***Electrochem***, **2020**, *1*, 4–19.

12. Y. Xie, C. Li, S. A. Razek, J. Fang, and **N. Dimitrov**, *Facile Synthesis of Nanoporous Au-Cu-Pt Alloy as Superior Catalyst for Methanol Oxidation Reaction*, ***ChemElectroChem*** **2020,** *7*, 562020.
13. Y. Xie and **N. Dimitrov**, *Ultralow Pt-loading Nanoporous Au-Cu-Pt Thin Film as Highly Active and Durable Catalyst for Formic Acid Oxidation*, ***Applied Catalysis B: Environmental,*** **2020**, *263*, 118336.
14. J. Li and **N. Dimitrov**, *NTBC and MTT Reduction Electrochemistry: Impact on Superconformal Plating for Fabrication of Glass Interposers*, ***Journal of the Electrochemical Society***, **2019**, *166(1)***,** D3120 - D3128**.** *This paper is published in the JES focus issue Advances in Electrochemical Processes for Interconnect Fabrication in Integrated Circuits*
15. Y. Xie, and **N. Dimitrov**, *Highly Active and Durable CuxAu(1−x) Ultrathin-Film Catalysts for Nitrate Electroreduction Synthesized by Surface-Limited Redox Replacement*, ***ACS Omega***, **2018**, *3(12)*, 17676 - 17686**.**
16. I. Achari, S. Ambrozik, and N. Dimitrov, *Electrochemical Atolic layer Deposition by Surface Limited Redox Replacement of Pd Thin Films Using Cu UPD Layers: Interrupting Mass-Transport Limited Growth*, ***Journal of the Electrochemical Society***, **2018**, 165(15), J3074-J3082. *This paper is published in the JES focus issue in honor of Dr. Radoslav Adzic*.
17. S. Ambrozik and N. Dimitrov, *Anion Effects on the Interfacial Alloying in Successively Electrodeposited Cu and Au Ultrathin Films*, ***Journal of Alloys and Compounds***, **2018**, *762*, 858-867.
18. E. Fey, J. Li, and **N. Dimitrov**, *Fast and Cost-Effective Superconformal Filling of High Aspect Ratio through Glass Vias Using MTT Additive*, ***Journal of the Electrochemical Society***, **2017**, 164 (6), D289-D296.
19. Innocent Achari, S. Ambrozik, and **N. Dimitrov**, *Electrochemical Atomic Layer Deposition of Pd Ultrathin Films by Surface Limited Redox Replacement of Underpotentially Deposited H in a Single Cell*, ***Journal of Physical Chemistry C***, **2017**, 121(8), 4404-4411.
20. H. Yang J. Xia, L. Bromberg, **N. Dimitrov**, and M.S. Whittingham, *Electrochemically synthesized nanoporous gold as a cathode material for Li-O_2 batteries*, ***Journal of Solid State Electrochemistry,*** **2017**, 21(2), 463-468.
21. J. Xia, I. Achari, S. Ambrozik, and **N. Dimitrov**, *Synthesis, characterization, and testing of Pt-NPG catalysts developed by de-alloying of electrodeposited $Cu_xAu_{(1-x)}$ thin films*, ***Materials Research Bulletin***, **2017**, 85 , 1-9.
22. S. Ambrozik, C. Mitchell, and **N. Dimitrov**, *The Spontaneous Deposition of Au on Pt (111) and Polycrystalline Pt,* ***Journal of the Electrochemical Society,*** **2016**, 163 (12), D3001-D3007. *This paper is part of the JES Focus Issue on Electrochemical Deposition as Surface Controlled Phenomenon.*
23. J. Xia, S. Ambrozik, C.C. Crane, J. Chen, and **N. Dimitrov**, *Impact of Structure and Composition on the Dealloying of $Cu_xAu_{(1-x)}$ Bulk and Nanoscale Alloys*, ***Journal of Physical Chemistry C***, **2016**, 120 , 2299-2308.
24. P. Ogutu, E. Fey, and **N. Dimitrov**, S*uperconformal Filling of High Aspect Ratio through Glass Vias (TGV) for Interposer Applications Using TNBT and NTBC Additives*, ***Journal of the Electrochemical Society***, **2015**, 162 (9), D457-D464.
25. S. Ambrozik and **N. Dimitrov**, *The Deposition of Pt via Electroless Surface Limited Redox Replacement*, ***Electrochimica Acta***, **2015**, 169, 248-255.
26. J. Xia, R.Rooney, S. Ambrozik, L. Bromberg, and **N. Dimitrov**, *Enhanced Adhesion of Ultrathin Nanoporous Au Deposits by Electrochemical Oxidation of Glassy Carbon*, ***Journal of the Electrochemical Society***, **2015**, 162 (6), H1-H9.

27. H. Yang, E. Fey, B.D. Trimm, N. Dimitrov, and M.S. Whittingham, *Effects of Pulse Plating on lithium electrodeposition, morphology and cycling efficiency*, ***Journal of Power Sources***, **2014**, 272, 900-908.
28. P. Ogutu, E. Fey, and **N. Dimitrov**, *Superconformal Filling of Through Vias in Glass Interposers*, ***ECS Electrochemistry Letters***, **2014**, 3 (8) D30-D32.
29. L. Bromberg, J. Xia, R.Rooney, and **N. Dimitrov**, *Enhanced Adhesion of Continuous Nanoporous Au Layers by Thermochemical Oxidation of Glassy Carbon*, ***Coatings***, **2014**, 4, 416-432. *This paper is dedicated to the retirement of Prof. M. Foresti*.
30. S. Ambrozik, B. Rawlings, N. Vasiljevic, and **N. Dimitrov**, *Metal Deposition via Electroless Surface Limited Redox Replacement*, ***Electrochemistry Communications***, **2014**, 44, 19-22.
31. L. Bromberg, J. Xia, M. Fayette, and **N. Dimitrov**, *Synthesis of Ultrathin and Continuous Layers of Nanoporous Au on Glassy Carbon Substrates*, ***Journal of the Electrochemical Society*** - This paper is part of the JES Focus Issue on Electrochemical Processing and Materials Tailoring for Advanced Energy Technology, **2014**, 161 (7), D3001-D3010.
32. P. Ogutu, E. Fey, P. Borgesen, and **N. Dimitrov**, *Hybryd Method for Metallization of Glass Interposers*, ***Journal of the Electrochemical Society***, **2013**, 160(12), D3228-D3236. *This paper is part of Focus Issue on Electrochemical Processing for Interconnects*

(2009 – 2013*, Post-Tenure & Promotion to Associate Professor*)

33. M. Fayette, J. Nutariya, N. Vasiljevic, and **N. Dimitrov**, *A Study of Pt Dissolution during Formic Acid Oxidation*, ***ACS Catalysis***, **2013**, 3, 1709−1718.
34. M. Kamundi, L. Bromberg, P. Ogutu, and **N. Dimitrov**, *Seeding strategies for the deposition of high density network of nanoporous Au cluster catalyst on glassy carbon electrodes*, ***Journal of Applied Electrochemistry***, **2013**, DOI 10.1007/s10800-013-0581-y
35. J. Nutariya, M. Fayette, **N. Dimitrov**, and N. Vasiljevic, *Growth of Platinum by Surface Limited Redox Replacement of Underpotentially Deposited Hydrogen*, ***Electrochimica Acta***, **2013**, http://dx.doi.org/10.1016/j.electacta.2013.01.052.
36. L. Bromberg, M. Fayette, B. Martens, Z. Luo, Y. Wang, D. Xu, J. Zhang, J. Fang, and **N. Dimitrov**, *Catalytic Performance Comparison of Shape-Dependent Nanocrystals and Oriented Ultra Thin Films of Pt_4Cu Alloy in the Formic Acid Oxidation Process*, ***Electrocatalysis***, **2012**, 4(1), 24;
37. C. Mitchell, M. Fayette, and **N. Dimitrov**, *Homo- and Hetero-Epitaxial Deposition of Au by Surface Limited Redox Replacement of Pb Underpotentially Deposited Layer in One-Cell Configuration*, ***Electrochimica Acta***, ***2012***, 85, 450;
38. M. Kamundi, L. Bromberg, E. Fey, C. Mitchell, M. Fayette, and **N. Dimitrov**, *Impact of Structure and Composition on the Dealloying of $Au_xAg_{(1-x)}$ Alloys on the Nanoscale*, ***Journal of Physical Chemistry C,*** **2012**, 116 , 14123;
39. F. Wafula, L. Yin, P. Borgesen,D, Andala and **N. Dimitrov**, *Influence of Poly(ethylene glycol) Degradation on Voiding Sporadically Occurring in Solder Joints with Electroplated Cu*, ***Journal of Electronic Materials***, **2012**, 41(7), 1898;
40. L. Yin, F. Wafula, **N. Dimitrov**, and P. Borgesen, *Toward a Better Understanding of the Effect of Cu Electroplating Process Parameters on Cu3Sn Voiding*, ***Journal of Electronic Materials***, **2012**, 41(2), 302;
41. D. A. McCurry, M.Kamundi, M. Fayette, F. Wafula, **N. Dimitrov**, *All Electrochemical Fabrication of a Platinized Nanoporous Au Thin-Film Catalyst*, ***ACS Applied Materials and Interfaces***, **2011,** *3*, 4459;

42. M. Fayette, Y. Liu, D. Bertrand, J. Nutariya, N. Vasiljevic, **N. Dimitrov**, *From Au to Pt via Surface Limited Redox Replacement of Pb UPD in One-Cell Configuration,* ***Langmuir****,* **2011,** *27(9),* 5650***;***
43. F. Wafula, Y. Liu, L. Yin, P. Borgesen, E.J. Cotts, and **N. Dimitrov** ***Journal of Applied Electrochemistry*****: 2011,** *41 (4),* 469;
44. Y. Liu, S. Bliznakov, and **N. Dimitrov**, *Factors Controlling the Less Noble Metal Retention in Nanoporous Structures Processed by Electrochemical De-alloying,* ***Journal of the Electrochemical Society***, **2010,** *157(8),* K168;
45. L T. Viyannalage, **N. Dimitrov**, and A. Silva, *Different Pathways of Oxygen Reduction Reaction Studied by Rotating Disk Electrode (RDE) Voltammetry: An Advanced Analytical Chemistry Exercise,* ***The Chemical Educator,*** **2010,** *15,* 290;
46. F. Wafula, Y. Liu, L. Yin, S. Bliznakov, P. Borgesen, E.J. Cotts, and **N. Dimitrov**, *Impact of Key Deposition Parameters on the Voiding, Sporadically Occurring in Solder Joints with Electroplated Copper,* ***Journal of the Electrochemical Society,*** **2010***,* ***157****(2),* D111;
47. Dan Xu, S. Bliznakov, Zhaoping Liu, Jiye Fang, and **N. Dimitrov**, *Composition-Dependent Electrocatalytic Activity of Pt-Cu Nanocube Catalysts towards Formic Acid Oxidation,* ***Angewandte Chemie,*** **2010,** *49,* 1**;**
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91. A.Popov , **N.Dimitrov**, T.Vitanov, *Adsorption of Thymine on the (111) Face of a Silver Single Crystal*, ***Electrochimica Acta***, **1992,** *37*, 2373;
92. R.Naneva, T.Vitanov, **N.Dimitrov**, V.Bostanov, A.Popov, *Adsorption of ClO_4, NO_2, and NO_3 on the (0001) Face of a Cadmium Single Crystal*, ***Journal of Electroanalytical Chemistry***, **1992,** *328*, 287;
93. A.Popov , R.Naneva, **N.Dimitrov**, T.Vitanov , V.Bostanov, R. De Levie, *Two-Dimensional Condensation of Thymine on a Basal Face of a Cadmium Single Crystal*, ***Electrochimica Acta***, **1992,** *37*, 2369;
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95. **N.Dimitrov,** A.Popov, D.Kashchiev, T.Vitanov, E.Budevski, *Experimental Verification of the Model of Slow Structural Transformations in Lead Underpotential Adsorbates on Ag(111) Faces at*

Low Coverages, ***Electrochimica Acta***, **1991,** *36*, 1259;

96. A.Popov, **N.Dimitrov**, D.Kashchiev, T.Vitanov, E.Budevski, *A Model of the Structural Transformation Processes in Lead Adsorbates on Ag(111) Faces at Low Coverages*, ***Electrochimica Acta***, **1989,** *34*, 269;
97. A.Popov, N.Dimitrov, O.Velev, T.Vitanov, E.Budevski, H.Siegenthaler, E.Schmidt , *Non-Equilibrium Phenomena at the Early Stage of Formation of Lead Underpotential Adsorbates on Electrolytycally Grown Ag(111) Electrode Surface, Electrochimica Acta*, **1989**, *34*, 265.

CONFERENCE PROCEEDINGS (FULL TEXT)

(2009 – Present)

1. S Thekkut, R Das, M Njuki, J Li, RS Sivasubramony, FW Alshatnawi, et al, Effect of Intermetallic Morphology Evolution on Void Formation in Ni/Sn/Ni Micro Joints, ... **2020**, IEEE 70th Electronic Components and Technology Conference (ECTC), 485-491
2. J. Li and N.Dimitrov, *Reduction Behavior of NTBC and MTT: Relevance to Cu Deposition via Superconformal Filling of Through Glass Vias***, ECS Transactions**, **2018,** *85 (13)* 789
3. I. Achari, S. Ambrozik, and N. Dimitrov, *Use of E-ALD by SLRR of Cu UPD Layers for the Growth of Pd Thin Films in One-Cell Configuration*, **ECS Transactions**, **2018,** *85 (12)* 3
4. L. Yin, P. Kondos, P. Borgesen, Y. Liu, S. Bliznakov**,** F. Wafula, **N. Dimitrov,** D.W. Henderson, C. Parks, M. Gao, J. Therriault, J. Wang, E.J. Cotts, and **"***Controlling Cu Electroplating to Prevent Sporadic Voiding in Cu_3Sn*", **ECTC Proceedings**, **2009,** p. 406.
5. F. Wafula, Y. Liu, L. Yin, S. Bliznakov**,** P. Borgesen, E.J. Cotts, and **N. Dimitrov, "***Understanding, Controlling and Minimizing the Voiding, Sporadically Occurring in Solder Joints with Electroplated Copper*", **ECS Transactions**, **2009,** 19 (24) 43**.**

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6. Y. Liu, J. Wang, L. Yin, P. Kondos, C. Parks, P. Borgesen, D.W. Henderson, S. Bliznakov**,** E.J. Cotts, and **N. Dimitrov, "***Improving Copper Electrodeposition in the Microelectronics Industry*", **ECTC Proceedings**, **2008,** pp. 2105-2110
7. S. Bliznakov, **N. Dimitrov**, T. Spassov, A. Popov, "*Metal hydride alloys for electrochemical energy source applications*", **MRS Proceedings**, **2008**, Vol. 1042.
8. L.T. Viyannalage, R.Vasilic and **N. Dimitrov**, *Epitaxial Growth by Galvanic Displacement*, **ECS Transactions, 2007,** *2(6)* 307**.**
9. R. Vasilic and **N. Dimitrov**, "*Epitaxial Growth of Ag on Au(111) by Monolayer Restricted Galvanic Displacement***" ECS Transactions, 2006,** *1(12)*, 33
10. N. Vasiljevic, L.T. Viyannalage, **N. Dimitrov**, N.A. Missert, R.G. Copeland**,** *Copper Surface Oxidation Induced by Local Alkalization***, ECS Transactions, 2006,** *1(4)*, 321.
11. S.G. Corcoran, S.R. Brankovic, **N. Dimitrov**, and K. Sieradzki, *Nanoindentation of Atomically Modified Surfaces*, in **Thin Films-Stresses and Mechanical Properties**, *MRS Symposium Proceedings.* 505, 77 (1998).
12. **N. Dimitrov**, I.Betova, A.Popov, R.Rashkov, *Adsorption of Tartaric Acid on Ag (111) and Ag (100) Single Crystal Faces, Proceedings, ESWWS - 1996 - Pamporovo, Bulgaria*

INVITED LECTURES

(2009 – Present)

1. *Impact of Electrodeposition in the Design and Synthesis of Functional Materials,* ***AWARD Talk at 242th Meeting of The Electrochemical Society (ECS) - Atlanta, GA,*** *October* **2022**
2. *Reliability Issues at the Interface of Solder with Electroplated Cu,* ***Invited Talk at the PERM Meeting #52 at BAE Systems****, Endicott, NY,* ***October 2022***
3. *Design and Synthesis of Functional Materials by Electrochemical Means,* ***Invited Talk at Oakland University, Detroit, MI, October 2022***
4. *All Electrochemical Synthesis of Nanoporous Cu Films for the Purposes of Fine Pitch and Low Temperature Interconnection in3D Packaging,* ***Invited Talk at the 240th Meeting of the Electrochemical Socie****ty, Orlando, FL: October 2021, (presented virtually)*
5. *Design and Synthesis of Nano-Porous / Nano-Structured Electrochemical Interfaces with Application in the Fuel Cell Catalysis,* ***Invited Talk at the 240th Meeting of the Electrochemical Socie****ty, Orlando, FL: October 2021, (presented virtually)*
6. *Design and Synthesis of Nano-porous / Nano-structured Electrochemical Interfaces with Application in the Fuel Cell Catalysis,* ***Invited Talk at UC Irvine, January 2021***
7. *Deposition of Metals and Alloys by E-ALD Using Surface Limited Redox Replacement Approach,* ***Invited Talk at 236th Meeting of The Electrochemical Society - Atlanta, GA,*** *October* **2019**
8. *Copper Superconformal Filling of High Aspect Ratio through Glass Holes Using MTT Additive: Plug Formation, Quality of the Fill, and MTT Reduction,* ***Invited Talk at 234th AiMES Meeting of The Electrochemical Society, Cancun, Mexico,*** *October* **2018.**
9. *Enhanced Growth and Catalytic Performance of Pd and Pd-Pt Alloy Ultrathin Films on Au By Surface Limited Redox Replacement of H UPD Layers in One-Cell Configuration,* ***Invited Talk at 234th AiMES Meeting of The Electrochemical Society, Cancun, Mexico,*** *October* **2018.**
10. *Superconformal Filling of through Glass Holes for Application in Glass Interposers,* ***Invited Talk at 233th Meeting of The Electrochemical Society - Seattle, WA,*** *May* **2018**
11. *Electrodeposition of Continuous Ultrathin Layers of Functionalized Nanoporus Catalyst On Glassy Carbon Electrodes,* ***Invited Talk at 233th Meeting of The Electrochemical Society - Seattle, WA,*** *May* **2018.**
12. *Copper Superconformal Filling of High Aspect Ratio through Glass Holes Using MTT Additive,* ***Invited Talk at Corning Inc., Corning, NY****, October* **2017**.
13. *De-Alloying of* $Cu_xAu_{(1-x)}$ *Alloys at Different Length Scales for the Development of Active Nanoporous Au Catalysts,* ***Invited Talk at 230th Prime Meeting of the Electrochemical Society, Honolulu, HI****, October* **2016.**
14. *Advances in the Growth of Metals and Alloys Assisted by a Monolayer Amount of UPD Atoms,* ***KEYNOTE TALK****,* ***66th Annual Meeting of International, Society of Electrochemistry, Taipei, Taiwan,*** *October* **2015**.
15. *Superconformal Filling of High Aspect Ratio Through Glass Vias (TGV) for Interposer Applications Using TNBT and NTBC Additives,* ***Invited Talk at 228th Meeting of The Electrochemical Society, Phoenix, AZ,*** *October* **2015.**
16. *Enhanced Adhesion of Nanoporous Metal Layers on Modified Glassy Carbon Surfaces,* ***Invited Talk at 226th Meeting of The Electrochemical Society, Cancun, Mexico,*** *October* **2014.**
17. *Deposition of Metal and Alloy Thin Films By Surface Limited Redox Replacement in a Galvanic Cell Configuration,* ***Invited Talk at 226th Meeting of The Electrochemical Society, Cancun, Mexico,*** *October* **2014.**

18. *All Electrochemical Method for Synthesis of Pt-Nanoporous Au Catalyst,* ***Invited Talk at Ithaca College, Ithaca, New York, NY,*** *April* **2014.**
19. *Study of Pt Dissolution During Formic Acid Oxidation On Thin Films Deposited Via Surface Limited Redox Replacements,* ***Invited Talk at 224th Meeting of The Electrochemical Society - San Francisco, CA,*** *October* **2013.**
20. *Electrodeposition of Continuous Ultrathin Layers of Functionalized Nanoporus Catalyst On Glassy Carbon Electrodes,* ***Invited Talk at 224th Meeting of The Electrochemical Society - San Francisco, CA,*** *October* **2013.**
21. *Synthesis and Performance of Nanoporous Catalysts,* ***Invited Talk at Long Island University, Brooklyn, New York, NY,*** *October* **2013.**
22. *Deposition of Ultra Thin Pt Films via Surface Limited Redox Replacement of UPD Layers on Au* ***Invited Talk at 222^{h} Meeting of the Electrochemical Society (ECS)***, ***Honolulu, HI***, October **2012.**
23. *Highly-Active Pt Coated NPG Catalyst for HCOOH Oxidation: Synthesis, SLRR Coating, Activity and Durability,* ***Invited Talk at 222^{h} Meeting of the Electrochemical Society (ECS)***, ***Honolulu, HI***, October **2012.**
24. ***"****Complete Electrochemical Fabrication of a Platinized Nanoporous Au Catalyst for Formic Acid Oxidation****", Invited Talk at Hofstra University, New York, NY,*** April **2012**.
25. *"Pt Deposition by Surface Limited Redox Replacement of H-UPD",* ***Invited Talk at 220^{h} Meeting of the Electrochemical Society (ECS)***, ***Boston, MA***, October **2011.**
26. *"Growth of Metal Multilayer Structures by SLRR and Surfactant Mediation",* ***Invited Talk at 219th Meeting of the ECS***, ***Montreal, QC***, May **2011.**
27. *"From Au to Pt via Surface Limited Redox Replacement of Pb UPD in One Pot Configuration",* ***Invited Talk at 219th Meeting of the ECS***, ***Montreal, QC***, May **2011.**
28. *"UPD of Metals in Surface Area Measurement*", ***Invited Talk at ACS - Northeast Regional Meeting (NERM)***, Potsdam, June **2010.**
29. *"Electrochemical BET or UPD of Metals in Surface Area Measurements",* ***Invited Talk at 217th Meeting of the ECS***, ***Vancouver, BC***, May **2010.**
30. *"Nanoporous Metal Substrates: Electrochemical Processing and Surface Area Measurements"* - ***Invited Talk at University of Houston,*** Houston, TX, April **2010.**
31. *"Epitaxial Growth of Metals, Alloys and Multilayers Assisted by a Monolayer Amount of UPD Atoms"* – ***Invited Talk at 216th Meeting of the ECS***, ***Vienna, Austria***, October **2009.**
32. **"***Understanding, Controlling and Minimizing the Voiding, Sporadically Occurring in Solder Joints with Electroplated Copper*" – ***Invited Talk at 215th Meeting of the ECS***, ***San Francisco, CA***, May **2009.**

(2003 – 2008)

33. "*Synthesis of Nanoporous Metals by Dealloying and Potential Controlled Displacement*" ***Invited Talk at Binghamton University - SUNY (Materials Science)***, February **2008**.
34. "*Voiding in Pb-Free Cu Solder Joints*", ***INDUSTRIAL INTEREST - Invited Talk at Endicott Interconnect Technologies (EIT), Endicott NY***, January **2008**.
35. "*Electrochemical Processing of Nanoporous Metallic Materials*", ***Invited Talk at University of New Mexico,*** Albuquerque, NM, November **2007**.
36. "*Growth of Metal Multilayer Structures by Surface Limited Redox Replacement*", ***Invited Talk at Clarkson University***, Potsdam, NY, October **2007**.
37. *"Growth of Metal Multilayer Structures by Surface Limited Redox Replacement*", ***Invited Talk at Binghamton University - SUNY (Chemistry)***, October **2007**.

38. "Growth of Metal Multilayers by SLRR" ***51st Annual Meeting of International Society of Electrochemistry (ISE)***, Banff, Canada, September **2007.**
39. *"New STM Structural Results for Cu UPD on Au(111) in Sulfate*", ***ACS - Northeast Regional Meeting (NERM)***, Binghamton, October **2006.**
40. *"Electrochemical Strategies for Growth of Epitaxial Metal Thin Films*, ***Invited Talk at Unovis Solutions, Inc, Binghamton, New York***, October **2005**.
41. "*Oxidation of Cu(100) in Acidic Solutions - An In-situ STM Study", **41st Annual American Vacuum Society***, New Mexico Chapter Meeting – June **2005.**
42. *"Nanoorganization and Stability in the System Pb^{2+}/Cu (hkl)*", ***ACS - Northeast Regional Meeting (NERM)***, Rochester, November **2004.**

NATIONAL AND INTERNATIONAL MEETING PRESENTATIONS

(2009 – Present)

1. Paul Ogutu, Edmond Fey, and Nikolay Dimitrov, *Additives suitable for super filling of through glass vias of high aspect ratio, **Talk at 228th Meeting of The Electrochemical Society, Phoenix, AZ,** October* **2015.**
2. S. Ambrozik and **N. Dimitrov**, *Deposition of Pt by Electroless Surface Limited Redox Replacement, **Talk at Northeast Meeting of American Chemical Society, Ithaca, NY***, June **2015.**
3. J. Xia, S. J. Ambrozik, C. Crane, J. Chen, and N. Dimitrov, *Impact of the Synthetic Route on the De-alloying of Electrodeposited Cu3Au Alloys, **Talk at 227th Meeting of the Electrochemical Society (ECS), Chicago, IL***, May **2015.**
4. S. Ambrozik and **N. Dimitrov**, *Electroless Deposition By Surface Limited Redox Replacement in One Cell Configuration, **Talk at 225th Meeting of the Electrochemical Society (ECS), Orlando, FL***, May **2014.**
5. N. Dimitrov, *Epitaxial Growth of Au on Pt (111) and Pt (poly) by Surface Limited Redox Replacement of Pb UPD Layer, **Talk at 222h Meeting of the Electrochemical Society (ECS), Honolulu, HI***, October **2012.**
6. M. Fayette, J. Nutaria, N. Vasiljevic and **N. Dimitrov**, "Activity and Durability of Low-index Pt and Pt-Cu Alloy Thin Films During Formic Acid Oxidation" Gordon Research Seminar, University of New England, Bidderford, ME, August, **2012.**
7. M. Kamundi, D. McCurry, M. Fayette, F. Wafula, and **N. Dimitrov**, "Structural Effects in the De-Alloying of Electrodeposited Au(1-x)Agx Thin Films and Spherical Particles", 2011 MRS Fall Meeting & Exhibit, Boston, MA, December **2011**.
8. **N. Dimitrov**, D. McCurry, M. Kamundi, M. Fayette, and F. Wafula, "*Complete Electrochemical Fabrication of a Platinized Nanoporous Au Catalyst for Formic Acid Oxidation*", 220h Meeting of the Electrochemical Society, Boston, MA, October **2011.**
9. Y. Liu, M. Fayette, and **N. Dimitrov** "*Growth of Pt Epitaxial Layers by Surface Limited Redox Replacement*", Gordon Research Conference in Electrodeposition, New London, NH, August **2010.**
10. M. Fayette, Y. Liu, and **N. Dimitrov** *"Deposition of Pt by SLRR of Pb UPD Layer*", *ACS - Northeast Regional Meeting (NERM)*, Potsdam, June **2010.**
11. S. Bliznakov, Y. Liu, and **N. Dimitrov**, "*Development of 3D Nanoporous Ag Architectures by Selective Electrochemical Dissolution and Potential-Controlled Displacement*", 5th Kurt Schwabe, Symposium, Erlangen, Germany, May **2009**.

(2003 –2008)

12. L.T. Viyannalage, S. Bliznakov and **N. Dimitrov**, *"New Electrochemical Method for Quantitative Determination of Trace Amounts of Lead"***,** 236th Meeting of American Chemical Society**,** Philadelphia, PA, August **2008.**

13. L.T. Viyannalage, R. Vasilic, S. Bliznakov and **N. Dimitrov**, "*Growth of Ag-Cu Superlattice Structures by Surface Limited Redox Replacement*", Gordon Research Conference in Electrodeposition, New London, NH, July **2008.**
14. L.T. Viyannalage, Y. Liu, **N. Dimitrov,** *"Growth of Nanoporous Layers by Potential Controlled Displacement"* 211th Meeting of The Electrochemical Society, Chicago, IL, USA. May, **2007**
15. L.T. Viyannalage, **N. Dimitrov,** "Copper Ultra Thin Films Growth on Au(111) by Surface Limited Redox Replacement" 233rd ACS National Meeting, Chicago, IL, USA. March 25-29, **2007**.
16. L.T. Viyannalage, R. Vasilic, **N. Dimitrov,** "Epitaxial Growth by Galvanic Displacement" 209th Meeting of The Electrochemical Society, Denver, May **2006.**
17. L.T. Viyannalage, L. Mendoza, **N. Dimitrov,** *"Quantitative Determination of Trace Amounts of Lead Using Surface Electrochemistry of Copper"* 231st ACS National Meeting, Atlanta, GA, USA. March 26-30, **2006**.
18. R.Vasilic and **N. Dimitrov**, *Epitaxial Growth by Galvanic Displacement*, 208th Meeting of The Electrochemical Society, - Los Angeles, October **2005**
19. N. Vasiljevic, L. T. Viyannalage N. Missert, **N. Dimitrov** and R. Copeland, *In-situ STM Study of Oxygen Adsorption and Passivation of Cu(100) in Acidic Solutions*, 207th Meeting of The Electrochemical Society, - Los Angeles, October **2005**
20. **N. Dimitrov**, R. Vasilic and N. Vasiljevic *Open Circuit Stability of Underpotentially Deposited Pb Layer on Cu (111) Face – An Experimental and Modeling Study*, 207th Meeting of The Electrochemical Society, Quebec City, Canada – May **2005**
21. N. Vasiljevic, **N. Dimitrov** and K. Sieardzki, In situ STM study of surface ordering during Pb UPD on Cu (111), 206th Meeting of The Electrochemical Society - Honolulu, Hawaii, October **2004**,

(1989 - 2003)

22. C. McCall, **N. Dimitrov** and K. Sieradzki, *Underpotential Deposition on Alloys*, MRS Fall Meeting, December **2001.**
23. **N. Dimitrov**, M. B. Vukmirovic, J. A. Mann, and K. Sieradzki, *RDE and RRDE Investigation of Copper Redistribution During Corrosion of Al 2024-T3,* Fall Meeting of the Electrochemical Society, Phoenix AZ, October **2000**.
24. M. B. Vukmirović, **N. Dimitrov**, and K. Sieradzki, *Experimental Models and Analogues of the Corrosion Behavior of Al 2024-T3,* Fall Meeting of the Electrochemical Society, Phoenix AZ, October 2000.
25. K. Sieradzki, C. A. Friesen, and **N. Dimitrov,** *Surface Stress and Electrocapilarity of Solids,* Fall Meeting of the Electrochemical Society, Phoenix AZ, October 2000.
26. K. Sieradzki, S. R. Brankovic, and **N. Dimitrov**, *Defect Mediated Electrochemical Growth*, Electrochemical Society meeting, Boston, November 1-6, (1998).
27. K. Sieradzki, S. R. Brankovic, and **N. Dimitrov**, *Passivation of Elemental FCC Metal Surfaces*, Electrochemical Society meeting, Boston, November 1-6, (1998).
28. S. G. Corcoran, S. R. Brankovic, **N. Dimitrov**, and K. Sieradzki, *Nanoindentation of Atomically Modified Surfaces*, MRS fall meeting, Boston, Dec. 1-5, (1997).
29. S G. Corcoran, R. J. Colton, S. R. Brankovic, **N. Dimitrov**, and K. Sieradzki, *Dislocation Nucleation at Nanoscale Contacts: Effects of Surface Modification*, ICMCTF, San Diego, April 21-25, (1997).
30. S. G. Corcoran, S. R. Brankovic, **N. Dimitrov**, and K. Sieradzki, *In Situ Nanoindentation of Electrochemically Modified Surfaces,* MRS spring meeting, Boston, April 13-17, (1997).
31. S. G. Corcoran, S. R. Brankovic, **N. Dimitrov**, and K. Sieradzki, *Nanoindentation of Atomically Modified Surfaces*, AVS fall meeting, Oct. 20-24, (1997).
32. K. Sieradzki, S. R. Brankovic and **N. Dimitrov**, *Silver Deposition and Dissolution at Low*

Overpotentials, MRS fall meeting, Boston, Dec. 2-5, (1996).

33. K. Sieradzki, Kim Wagner, S. R. Brankovic and **N. Dimitrov**, *Selective dissolution of Ag-Au and Cu-Au Alloys Below the Critical Potential*, MRS fall meeting, Boston, Dec. **1996**.
34. K. Sieradzki, S.R. Brankiovic, and **N. Dimitrov**, "*Silver Deposition and Dissolution at Low Overpotentials*, " Proceedings of the Symposium on Electrochemical Synthesis and Modification of Materials, MRS Fall Meeting, Boston, MA **1996**.
35. N. Dimitrov, A. Popov, T. Vitanov, D. Kashchiev, *Modelling Transformation Processes in Underpotential Lead Adsorbate on Ag(111)*, 4th International Fisher Simposium, Karlsruhe, Germany, June, **1994**.
36. T. Vitanov, **N. Dimitrov**, A. Popov, E. Budevski, *Non-Equilibrium Phenomena at the Early Stage of Formation of Lead Underpotential Adsorbates on Electrolytically Grown Ag(111) Electrode Surface*, 41st Meeting of the International Society of Electrochemistry (ISE), Prague, Czech Republic, August, **1990**.
37. Popov, **N. Dimitrov**, R. Naneva, T.Vitanov, *Two-Dimensional Condensation of Thymine on a Basal Face of a Cadmium Single Crystal*, 2nd International Fisher Symposium, Karlsruhe, Germany, June, **1992**.

TEACHING

TEACHING PHILOSOPHY

Learning is the main purpose of education. It is the goal of every student. That is why every teacher tries to bring more knowledge and better understanding to the classroom. I feel that my role as an educator is to (first) comprehend ideas, concepts and exciting results reported and discussed in the mainstream scientific journals and/or generated by my own research, and to then summarize and translate this information to a language that my students would understand. This suggests that a good teacher should have energy and motivation to be able to "broadcast" at the "wavelength" of students' antennas. As a professor of chemistry I am aware about the college students' perception that chemistry (and even more – electrochemistry as my strongest field) is a difficult subject to deal with. At the same time I know what charming science chemistry is, I have learnt to appreciate the interaction of this science with our everyday life and I have placed my own research for years as an extra child in my family. As a result of all that, I realize that my main goal as a chemistry educator is to open the curtain to my students and let the light that would shine out of it reveal every detail of the magnificent world of atoms, molecules and their interaction.

In my teaching practice regardless on whether my students are chemistry majors, other science majors, or non-science majors (engineering or nursing) I believe the best way to accomplish my mission as an educator is by using a variety of means to engage students as actively as possible within the colorful learning environment available today. These means of engagement range from student centered learning, to multi-week inquiry-based independent projects, to small-group problem-solving, to "bonus" concept questions and pop-up quizzes given without prior notification. I also realize that while my primary responsibility in the classroom is to present the matter of interest, I need to stay up to date with students' needs and adjust instruction accordingly. Thus, I would receive a steady feedback from the students and would help them realize their important role in the entire learning process. I strongly believe that success of this methodology would maximize the outcome of the students' effort whose common goal is for everyone to learn as much as it is possible.

Summarizing the essence of my teaching experience, I stand firm on my drive toward excellence in the classroom and hope that my passion and excitement are (at least to some extent) shared by the students. While never disregarding cutting edge new applications and attractive research achievements, I emphasize in my teaching the solid fundament of classical findings which today is somewhat insufficient in the background of college students. I am confident that even with the risk to look boring with heavily focusing on notions and concepts that the audience often feels familiar with, the general appreciation is inevitable when seniors (for instance) start discriminating for the first time between *thermodynamic* and *kinetic* effects. Thus, enforcing the basics, I contribute my deal to the solid scientific foundation that has for centuries had the strength to accommodate the unbearable progress of being.

COURSES TAUGHT

Primary Teaching Activities

- **CHEM 107** "Intro Chemical Principles I" (Fall 2009 – ***358 students***)
- **CHEM 111** "Chemistry Principles" (Fall 2006, 2012, 2015, 2018 – ***306, 330, 356, 125 students***)
- **CHEM 221** "Analytical Chemistry" (Spring 2004, 2008, 2011, 2012, 2014, 2020, 2023 – ***42, 70, 82, 90, 88, 106, 102 students.***)
- **CHEM 422** "Instrumental Analysis" (Fall 2004, 2005, 2010, 2013, 2016, 2019, 2021, 2022 – ***20, 37, 35, 42, 48, 40, 47 students.***)
- **CHEM 421/521** "Advanced Analytical Chemistry" (Spring 2006, 2009, 2015, 2018, 2021, 2024 – ***12, 6, 10, 12, 20 students.***)
- **CHEM 482E/582E** Special Topic (Fall 2003, 2005, 2008, 2011, 2013, 2014, 2016, 2017, 2019, 2020, 2022(spring) – ***12, 6, 17, 20, 20, 19, 18, 20, 15 students.***)

Secondary Teaching Activities

- **CHEM 397** (All years – usually 2 students/semester)
- **CHEM 497/498** (All years – usually 1 student/semester)
- **CHEM 411/511** (All years, two lectures contributed, 25 students)
- **CHEM 593** "Frontiers in Chemistry" (Spring 2007 – ***15 students***)
- **MTLS 593** "Frontiers in Materials Science" (Fall 2005 – ***6 students***).
- **CHEM 597/598** (All years)
- **MTLS 698/699** (All years)
- **CHEM 698/699** (All years)

CURRICULUM DEVELOPMENT

I started developing my teaching experience more than ten years ago back in my home country, Bulgaria. At that time I taught as an adjunct "*Electrochemistry*" and "*Corrosion and Protection*" to college students. I noticed in a short time that efforts in steadily interacting with students and making them thinking critically seemed beneficial to the outcome of my teaching. This helped me founding my teaching approach on the belief that it is most important to stimulate student's analytical thinking and abilities. My first attempt to introduce this

philosophy was made when I taught a *special topic* course upon joining the Department of Chemistry at Binghamton University. Despite the limited excitement that my effort generated in the beginning, I patiently kept implementing goals such as helping students think independently, training them to articulate their ideas clearly and encouraging with incentives and bonuses the in-class participation in my undergraduate "*Analytical Chemistry*" and "*Instrumental Analysis*" courses. My confidence in the success of this approach motivated me to try the best of it even in my *General Chemistry* course where more than 300 freshmen were interactively engaged with alternative viewpoints and generously rewarded for critical thinking. While initially showing reserve and skepticism, the students start gradually responding positively, come to class with their initiatives and participate with interest to deliver eventually the mutual satisfaction of the learning process. Thus, it becomes obvious for all of them that they are beyond parroting notions, ideas and concepts and are instead able to draw their own conclusions regarding the course matter. Elements and results of my approach were reported on campus wide workshops emphasizing student-centered learning.

STUDENT SUPERVISION

Graduate Students:

- **Jackson Zhang** – Ph.D. in Chemistry ***Expected Graduation – Fall 2028***
- **Zhen Lei –** Ph.D. in Chemistry ***Expected Graduation – Fall 2026***
- **Abdullah Faisal Pasha** – Ph.D. in Chemistry ***Expected Graduation – Fall 2025***
- **Michael Njuki** – Ph.D. in Chemistry, **GRADUATED *in Summer 2023***
- **Ezer Castillo*,(otrch)++** – Ph.D. in Chemistry, **GRADUATED *in Summer 2023***
- **Yunxiang Xie*** – Ph.D. in Chemistry, **GRADUATED *in Summer 2021***
- **Innocent Achari+** – Ph.D. in Chemistry, **GRADUATED *in Spring 2021***
- **Jiaxin Li** – Ph.D. in Chemistry, **GRADUATED *in Spring 2020***
- **Stephen Ambrozik*, (otrch)** – Ph.D. in Chemistry, **GRADUATED *in Fall 2017***
- **Jiaxin Xia –** Ph.D. in Chemistry, **GRADUATED *in Fall 2016***
- **Paul Ogutu+** – Ph.D. in Chemistry, **GRADUATED *in Spring 2016***
- **Loriana Bromberg –** Ph.D. in Chemistry**,** **GRADUATED *in Fall 2014***
- **Matthew Fayette**** – Ph.D. in Chemistry, **GRADUATED *in Spring 2013***
- **Martha Kamundi -** Ph.D. in Chemistry, **GRADUATED *in Spring 2013***
- **Fred Wafula++ -** Ph.D. in Chemistry, **GRADUATED *in Fall 2011***
- **Yihua Liu*** – Ph.D. in Materials Science, **GRADUATED *in Fall 2010***
- **Lasantha Viyannalage *** – Ph.D. in Chemistry, **GRADUATED *in Fall 2008***
- **Rastko Vasilic *** – Ph.D. in Materials Science, **GRADUATED *in Spring 2006***
- **Zachary Keck -** M.S. in Materials Science, **GRADUATED *in Spring 2020***
- **Corey Mitchell+** – M.S. in Chemistry, **GRADUATED *in Fall 2016***
- **Loriana Bromberg –** M.S. in Chemistry**,** **GRADUATED *in Spring 2013***
- **Daniel Iversen** – M.A. in Chemistry, **GRADUATED *in Spring 2009***
- **Liliana Mendoza** – M.A. in Chemistry, **GRADUATED *in Summer 2007***

** received BU Research Award, ** received Chemistry Department Research Award,*

[+] *BU Teaching Award,* [++] *received Chemistry Department Teaching Award*
[+++] *received Chemistry Department Award for Best First-Year TA*

Undergraduate Students:

- **Jackson Zhang** B.S. in Chemistry, **GRADUATED May 2023**
- **Dean Pelegrino -** B.S. in Chemistry, **GRADUATED May 2023**
- **Gillian Weissman -** B.S. in Chemistry, **GRADUATED May 2023**
- **Sage Lopez -** B.S. in Chemistry, **GRADUATED May 2020**
- **Ara Simonian -** B.S. in Chemistry, **GRADUATED May 2019**
- **Nicholas Negri -** B.S. in Chemistry, **GRADUATED May 2019**
- **Zachary Railley -** B.S. in Chemistry, **GRADUATED May 2019**
- **Ted Lam -** B.S. in Chemistry, **GRADUATED May 2018**
- **Malavika Kalarikkal-Puthoor-** B.S. in Chemistry, **GRADUATED May 2018**
- **Anastasiya Sadovskaya -** B.S. in Chemistry, **GRADUATED May 2017**
- **Daniel Carmel -** B.S. in Chemistry, **GRADUATED May 2017**
- **Kushal Patel -** B.S. in Chemistry, **GRADUATED May 2017**
- **Fusseina Gimbala -** B.S. in Chemistry, **GRADUATED May 2015**
- **Mitchell Coffin-** B.S. in Chemistry, **GRADUATED May 2015**
- **Ryan Rooney -** B.S. in Chemistry, ***(Honors Thesis)*** **GRADUATED May 2014**
- **Rohan Gheewala** – B.A. in Business and Minor in Engineering, **GRADUATED** May **2014**
- **Andrew McClary** - B.S. in Chemistry, **GRADUATED May 2014**
- **Ryan Jezorek** - B.S. in Chemistry, **GRADUATED May 2013**
- **Alexandra Foxx** – B.S. in Chemical Engineering (Johns Hopkins), **GRADUATED May 2013**
- **Andrew Lake** – B.S. in Chemistry, **GRADUATED May 2013**
- **Jeremy Scher -** B.S. in Chemistry, **GRADUATED May 2012**
- **Daniel McCurry –** B.S. in Chemistry, ***(Honors Thesis)*** **GRADUATED May 2011**
- **Stephanie Geer –** B.S. in Chemistry (SUNY Brockport), **GRADUATED May 2011**
- **Bilal Ahmed –** B.S. in Chemistry **GRADUATED May 2011**
- **Richard Leong –** B.S. in Chemistry**, GRADUATED May 2010**
- **Andrew Lee –** B.S. in Chemistry**, *(Honors Thesis)* GRADUATED May 2010**
- **Justin Patton -** B.S. in Chemistry**, GRADUATED May 2009**
- **Yihua Liu –** B.S. in Chemistry**, *(Honors Thesis)* GRADUATED, May 2007**
- **Hayoun Li, -** B.S. in Chemistry, **GRADUATED , May 2007**
- **Brian Nebel, -** B.S. in Chemistry**, GRADUATED, May 2005**
- **David Roufail –** B.S. in Chemistry**, GRADUATED, May 2005**

POSTDOCTORAL SUPERVISION AND VISITING SCIENTIST COLLABORATION

Postdoctoral Supervisor:

- **Dr. Edmond Fey –** ***September 2011 to 2017***
- **Dr. Stoyan Bliznakov** – ***May 2007 to January 2010***

SERVICE

ORGANIZING / CHAIRING CONFERENCES SYMPOSIA

Conference: ***238th Meeting of the Electrochemical Society***
Responsibility: • *Symposium Organizer and* Session Chair,
Conference Date: Gothenburg, Sweden, October, 2023

Conference: ***236th Meeting of the Electrochemical Society***
Responsibility: • *Symposium Organizer and* Session Chair,
Conference Date: Atlanta, GA, October, 2022

Conference: ***236th Meeting of the Electrochemical Society***
Responsibility: • *Symposium Organizer and* Session Chair,
Conference Date: Atlanta, GA, October, 2019

Conference: ***234th Meeting of the Electrochemical Society***
Responsibility: • *Symposium Organizer and* Session Chair,
Conference Date: Cancun, Mexico, October, 2018

Conference: ***68th International Society of Electrochemistry (ISE) Meeting***
Responsibility: • *Principal Symposium Organizer and* Session Chair,
Conference Date: Providence, RI, August, 2017

Conference: The ***41th*** **Northeast Regional Meeting (NERM)** of the **American Chemical Society**
Responsibility: • Program Co-Chair of the NERM.
Conference Date: Binghamton, NY*;* October, 2016

Conference: ***230th Meeting of the Electrochemical Society***
Responsibility: • *Symposium Organizer and* Session Chair,
Conference Date: Honolulu, HW, October, 2016

Conference: The ***40th*** **NERM** of the **American Chemical Society**
Responsibility: • Organizer of a symposium and Session Chair "***Materials for Energy"***".
Conference Date: Ithaca, NY*;* June 11-14, 2015

Conference: ***226th Meeting of the Electrochemical Society***
Responsibility: • *Symposium Organizer and* Session Chair,
Conference Date: Cancun, Mexico, October, 2014

Conference: ***225th Meeting of the Electrochemical Society***
Responsibility: • *Symposium Organizer and* Session Chair,
Conference Date: Orlando, FL, May, 2014

Conference: ***224th Meeting of the Electrochemical Society***
Responsibility: • *Symposium Organizer and* Session Chair,
Conference Date: San Francisco, CA, October, 2013

Conference: ***222th Meeting of the Electrochemical Society***
Responsibility: • *Symposium Organizer and* Session Chair,
Conference Date: Honolulu, HW, October, 2012

Conference: ***220th Meeting of the Electrochemical Society***
Responsibility: • Session Chair,
Conference Date: Boston, MA, October, 2011

Conference: ***219th Meeting of the Electrochemical Society***
Responsibility: • Session Chair,
Conference Date: Montreal, CANADA, May, 2011

Conference: **Gordon Research Conference in Electrodeposition**
Responsibility: • Discussion Leader, **"*Thin Film Deposition*"**.
Conference Date: *New London, NH,* August 2-6, 2010

Conference: The ***37th*** **Northeast Regional Meeting NERM** of **American Chemical Society**
Responsibility: • Organizer of a symposium "***Physical Chemistry – General Session"***".
Conference Date: *Potsdam, NY;* June 2-5, 2010

Conference: ***216th Meeting of the Electrochemical Society***
Responsibility: • Session Chair, ***Symposium In memoriam: E. Budevski"***.
Conference Date: Vienna, Austria, October 3-9, 2009

Conference: The **34th NERM** of **American Chemical Society**
Responsibility: • Organizer of a symposium "***Nanostructured Materials - Surfaces and Interfaces***". A **$2000 grant** was also awarded by **ACS** to my symposium.
• Active member of NERM 2006 Steering Committee.
Conference Date: Binghamton, NY, October 5-7, 2006

PROFESSIONAL REVIEWING

Book Review

- **2004 for *W. H. Freeman and Company Publishers* - "Quantitative Chemical Analysis"** 7th edition by Daniel Harris.
- **2005 for *John Willey & Sons Publishers*** – **"Quantitative Analysis"** by Robert de Levie – a book proposal.
- **2006 for *W. H. Freeman and Company Publishers* - "Exploring Chemical Analysis"** 6th edition by Daniel Harris

Journal Review

- **ACS Applied Materials and Interfaces (five times)**
- **Advanced Materials and Advanced Functional Materials (four times)**
- **ACS Catalysis (five times)**
- **Applied Catalysis B, Environmental (three times)**
- **Analytical Chemistry (three times)**
- **ChemElectroChem (four times)**
- **ChemSusChem (three times)**
- **Corrosion (four times)**
- **Electrocatalysis (five times)**
- **Electrochemical and Solid State Letters (five times)**
- **Electrochemistry Communications (four times)**
- **Electrochimica Acta (20 times)**
- **JACS (three times)**
- **Journal of Applied Electrochemistry (four times)**
- **Journal of Electroanalytical Chemistry (five times)**
- **Journal of Materials Research (four times)**
- **Journal of the Electrochemical Society (25 times)**
- **Journal of Physical Chemistry (15 times)**
- **Langmuir (six times)**
- **RSC Advances (two times)**
- **Scripta Materiala (two times)**
- **Small (two times)**

Proposal Review and Panel Review

- **National Science Foundation – CHEMISTRY (March 2019)**
- **National Science Foundation – CHEMISTRY (January 2019)**
- **National Science Foundation – SBIR (March 2018)**
- **Petroleum Research Fund – (August 2018)**

- **Department of Energy – BAS (February 2018)**
- **National Science Foundation – SBIR (September 2017)**
- **Petroleum Research Fund – (August 2018)**
- **National Science Foundation – CMMI (May 2016)**
- **Department of Energy (2009, 2014)**
- **International Copper Organization (ICA-MAT) (2004; 2006)**
- **National Science Foundation – Chemistry (2007; 2008, 2009)**
- **National Science Foundation – DMR (2006, 2 times 2007, 2010, 2 times 2011, 2 times 2012, 2013, 2014, 2015, 2017)**
- **Research Corporation (2008)**

Tenure and Promotion Review

- **Adelphi University (2021), University of Arkansas (2019),**
- **University of Missouri (2019), University of Southern Mississippi (2017)**
- **Clarkson University (2010), Brookhaven National laboratory (2011)**

SERVING ON PH.D., M.S., HONORS THESIS COMMITTEES

Ph.D. Dissertation Defense

1. Tolulope Salami – Doctorate – Chemistry (2004)
2. Samuel Lutta – Doctorate – Chemistry (2005)
3. Dat T. Tran – Doctorate - Chemistry (2005)
4. Onduru Odongo – Doctorate – Chemistry (2005)
5. Nancy Kariuki - Doctorate – Chemistry (2006)
6. Jack Fox - Doctorate - Chemistry, (2006)
7. Crispin Kowenje - Doctorate - Chemistry, (2006)
8. Rastko Vasilic - Doctorate - Materials Science (2006)
9. Hong Dong - Doctorate – Chemistry (2006)
10. Tedman Onyango - Doctorate - Materials Science (2006)
11. Daniel Brenan - Doctorate – Chemistry (2006)
12. Charles Kanyi - Doctorate – Chemistry (2006)
13. Isaac K'Owino - Doctorate – Chemistry (2006)
14. Frederick Ochanda - Doctorate – Chemistry (2007)
15. Justin Martin - Doctorate – Chemistry (2007)
16. Lingyan Wang - Doctorate – Chemistry (2007)
17. Jiajun Chen - Doctorate – Chemistry (2007)
18. Austin Aluoch - Doctorate - Chemistry (2007)
19. Renuka Manchanyakage – Doctorate – Chemistry (2007)
20. Chen Chen - Doctorate – Chemistry (2007)
21. Joel Christian - Doctorate - Materials Science (2007)
22. Peter Njoki - Doctorate – Chemistry (2007)
23. Jason Karasinski - Doctorate – Chemistry (2007)

24. Samuel Kikandi - Doctorate – Chemistry (2008)
25. Quan Fan - Doctorate – Chemistry (2008)
26. Jie Xiao – Doctorate – Chemistry (2008)
27. Lasantha Viyannalage – Chemistry (2008)
28. Jasper Chiguma - Materials Science (2009)
29. Jun Zhang, - Chemistry (2009)
30. Jian Hong, - Materials Science (2009)
31. Dickson Andala - Chemistry (2010)
32. Yihua Liu – Materials Science (2010)
33. Samuel Mwilu - Chemistry (2010)
34. Zhaoyong Sun - Chemistry (2010)
35. Sherryllene Pinnock – Chemistry (2011)
36. Joel Miller - Materials Science (2011)
37. Fred Wafula – Chemistry (2011)
38. Nian Du – Chemistry (2011)
39. ShiJun Yu – Materials Science (2012)
40. Rameshwori Loukrakpam – Chemistry (2012)
41. Naumih Noah – Chemistry (2012)
42. Eliud Mushibe – Chemistry (2012)
43. Emily Obyua – Chemistry (2012)
44. Jinfong Pan - Materials Science (2013)
45. Deborah Williams - Materials Science (2013)
46. Martha Kamundi - Chemistry (2013)
47. Matthew Fayette - Chemistry (2013)
48. Elizabeth Crew – Chemistry (2013)
49. Robert Congdon – Chemistry (2013)
50. Heng Yang – Materials Science (2014)
51. Gregory Parks - Physics (2014)
52. Zhixin Dong - Materials Science (2015)
53. Chenyu Wang – Chemistry (2015)
54. Luke Wentlent, Materials Science (2015)
55. Shiyao Shan – Chemistry (2016)
56. Yiqing Huang– Chemistry (2016)
57. Wei Zhao – Chemistry (2016)
58. Yiqing Huang– Chemistry (2016)
59. Francis Mutuku– Physics (2016)
60. Idris Yazagan – Chemistry (2016)
61. Youngmin Chung– Chemistry (2016)
62. Maria Roma – Materials Science (2016)
63. Donsheng Ji – Chemistry (2017)
64. Linyue Tong – Chemistry (2017)
65. Victor Kariuki– Chemistry (2017)
66. Jiaxin Xia – Chemistry (2016)
67. Shawn Salis – Physics (2017)

68. Stephen Ambrozik – Chemistry (2017)
69. Haval Kareem – Chemistry (2018)
70. Jing Zhang – Materials Science (2018)
71. Heather Crapo – Chemistry (2018)
72. Nikolas Zagarella – Chemistry (2018)
73. Yong Shi– Chemistry (2018)
74. Shaojie Jiang – Materials Science (2019)
75. Shan Yan – Chemistry (2019)
76. Jing Li - Chemistry (2019)
77. Boxiao Li – Materials Science (2019)
78. Jiaxin Li – Chemistry (2020)
79. Xiaohui Li – Chemistry (2020)
80. Carol Kaplan – Chemistry (2020)
81. Can Li – Chemistry (2020)
82. Marc Farancis Hidalgo – Materials Science (2020)
83. Innocent Achari– Chemistry (2021)
84. Yunxiang Xie - Chemistry (2021)
85. Anshika Goel - Chemistry (2021)
86. Kaitlin McCardle - Chemistry (2021)
87. Yiliang Luan - Chemistry (2021)
88. Richard Robinson – Chemistry (2022)
89. Shan Wang – Materials Science (2022)
90. Sanoop Thekkut – Materials Science (2022)
91. Yaguang Zhu – Materials Science (2022)
92. Ezer Castillo - Chemistry (2023)
93. Michael Njuki - Chemistry (2023)
94. Victoria Kompanjec - Chemistry (2023)
95. Zeying Chen – Materials Science (2023)
96. Ronit Das – Materials Science (2023)
97. Maureen Kitheka - Chemistry (2022)

Masters Thesis Defense

1. Michael Chin – Masters Thesis - Materials Science (2005)
2. Elizabeth Crew - Chemistry – Masters Thesis (2005)
3. Jasper Chiguma - Masters - Materials Science (2005)
4. Liliana Mendoza - Chemistry, Masters Project (2007)
5. Andy Giamis - Materials Science - Masters Thesis (2007)
6. Babita Nenavath - Materials Science -Masters Project (2008)
7. Daniel Iversen – Chemistry – Masters Project (2009)
8. Azita Eshgraghi - Chemistry - Masters Thesis (2010)
9. Benjamin Martens – Chemistry – Masters Thesis (2011)
10. Suraj Maganty – Materials Science – Masters Thesis (2012)
11. Hong Wu – Materials Science – Masters Thesis (2013)
12. Lori Ana Bromberg – Chemistry – Masters Thesis (2013)

13. Randy Calender - Chemistry – Masters Thesis (2013)
14. Brendan Hughes – Chemistry – Masters Thesis (2017)
15. Brendan Ashley – Bioengineering – Masters Thesis (2018)
16. Roland Miller – Chemistry – Masters Thesis (2020)
17. Zachary Keck – Materials Science – Masters Thesis (2020)
18. Vanessa Mai – Chemistry – Masters Thesis (2022)

Honors Thesis Defense

1. Diana Leung – Bachelors - Chemistry (2005)
2. Ari Atkinson – Bachelors – Chemistry (2005)
3. Kunal Amrute – Bachelors – Chemistry (2005)
4. Joy Romulus - Bachelors – Chemistry (2006)
5. Stacie Rice - Bachelors – Chemistry (2006)
6. Samira Musah - Bachelors – Chemistry (2006)
7. Leslie White - Bachelors –Chemistry (2007)
8. Yihua Liu - Bachelors – Chemistry (2007)
9. Aaron Satler - Bachelors - Chemistry (2007)
10. Vincent Lee – Bachelors – Chemistry (2008)
11. Spencer Robbins – Bachelors – Chemistry (2008)
12. Elayna Weller – Bachelors - Chemistry (2009)
13. Roz Najafabadi – Bachelors - Chemistry (2009)
14. Fenix Garcia Tigreros – Bachelors - Chemistry (2009)
15. Daniel Mahoney - Bachelors - Chemistry (2010)
16. Andrew Lee - Bachelors - Chemistry (2010)
17. Peipei Hu - Chemistry (2010)
18. Michael Feurstein - Chemistry (2011)
19. Daniel McCurry - Chemistry (2011)
20. Abigail Oakes – Chemistry (2012)
21. Welley Loc – Chemistry (2012)
22. Aaaron Taggart – Chemistry (2014)
23. Ryan Rooney – Chemistry (2014)
24. Emma Gordon – Chemistry (2014)
25. Phuong Nam Li – Chemistry (2015)

Preliminary Oral Examination

1. Robert Kiyanjui, Materials Science
2. Tedman Onyango, Materials Science
3. Frederick Ochanda, Chemistry
4. Jack Fox, Chemistry
5. Austin Aluoch, Chemistry
6. Quan Fan, Chemistry
7. Chen Chen, Chemistry
8. Rastko Vasilic, Materials Science
9. Samuel Kikandi, Chemistry

10. Charles Kanyi, Chemistry
11. Peter Njoki, Chemistry
12. Renuka Manchanayakage, Chemistry
13. Lingyan Wang, Chemistry
14. Jiajun Chen, Chemistry
15. Joel Christian, Materials Science
16. Lasantha Viyannalage, Chemistry
17. Jie Xiao, Chemistry
18. Marcels Omole, Chemistry
19. Mark Schadt, Chemistry
20. Zhaoyong Sun, Chemistry
21. Jasper Chiguma, Materials Science
22. Megan Ropolo, Chemistry
23. Bridgit Wangala, Chemistry
24. Samuel Mwilu, Chemistry
25. Dikson Andala, Chemistry
26. Joel Miller, Materials Science
27. Sherryllene Pinnock, Chemistry
28. Nian Du, Chemistry
29. Jian Hong, Materials Science
30. Yihua Liu, Materials Science
31. Rameshwori Loukrakpam, Chemistry
32. ShiJun Yu, Materials Engineering
33. Langli Luo, Materials Engineering
34. Kun Bao, Chemistry
35. Syeda Begum, Chemistry
36. Jun Yin, Chemistry
37. Martha Kamundi, Chemistry
38. Naomih Noah, Chemistry
39. Fred Wafula, Chemistry
40. Emily Obuya, Chemistry
41. Eliud Mushibe, Chemistry
42. Jing Xie, Materials Science
43. Debbie Williams, Materials Science
44. Robert Congdon, Chemistry
45. ShiJun Yu, Materials Science
46. Fredrick Omenya, Chemistry
47. Jinfong Pan, Materials Science
48. Randolph Callender, Chemistry
49. Matthew Fayette, Chemistry
50. Corey Mitchell, Chemistry
51. Loriana Valentin, Chemistry

52. Natthan Porter, Chemistry
53. Heng Yang, Materials Science
54. Hong Wu, Materials Science
55. Jin Fang, Materials Science
56. Paul Ogutu, Chemistry
57. Kenneth Skorenko, Chemistry
58. Chenju Wang
59. Bohua Wen, Materials Science
60. Zhixin Dong, Materials Science
61. Yiqing Huang, Chemistry
62. Tianchan Jiang, Chemistry
63. Idris Yazagan, Chemistry
64. Maria Roma, Materials Science
65. Linyue Tong, Materials Science
66. Jiaxin Xia, Chemistry
67. Luke Wentlent, Materials Science
68. Dongsheng Ji, Chemistry
69. Youngmin Chung, Chemistry
70. Stephen Ambrozik, Chemistry
71. Victor Kariuki, Chemistry
72. Jing Zhang, - Chemistry
73. Jing Li, Chemistry
74. Shaojie Jiang, Materials Science
75. Haval Kareem, Chemistry
76. Innocent Achari
77. Jiaxin Li
78. Shan Wang
79. Yunxiang Xie
80. Michael Njuki
81. Zhen Lei
82. Abdullah Faisal Pasha

UNIVERSITY (CAMPUS WIDE) AND DEPARTMENT SERVICE

University Service

- Member of the Graduate Council and Academic Standards Committee (2018-2021)
- Member of the All-University Personnel Committee (2012-13; 2019-20)
- Member of Faculty Senate at Binghamton University (2018-2020)

- Member of the Harpur Academic Honesty Committee (2009-2013)
- Faculty Member of the Materials Science and Engineering Program at Binghamton University (2003 – Present)
- Member of the *Small Scale Systems (S3)* committee (2004 – Present)
- Member of the *Center for Advanced Sensor Research (CASE)* (2004 – Present)

Department Service

- Co-Chair of the GPC (2021 – 2022)
- Chair of the GPC, Graduate Director (2010 – 2014; 2017-2021)
- *Graduate Admissions Committee* - member (2014-2021)
- *Graduate Program Committee* - member (2006 – 2010 and 2014-2015, 2021 - present)
- Chair of the Safety Committee (2009 - 2010)
- *Undergraduate Program Committee* (UPC) (2003–2004 and 2005–2006)
- *Strategic Planning Committee* (SPC) (2003–2005 and 2010 - present)
- *Space Committee* (2003–2005; 2020-present)
- *Grievance Committee* (2005–2006; 2019-present)
- *Analytical Sub-discipline Convener* (2003-2005; 2017-2019)
- *Chemistry Colloquium Series* (Spring 2005 and Spring 2007)
- *Served in many ad-hoc committees in the Chemistry Department*

COMMUNITY AND PUBLIC SERVICE

- *Chair of the ACS Local Section at Binghamton (2011).*
- *Chair elect of the ACS Local Section at Binghamton (2010).*
- *Member at large in the Executive Committee of the ACS Local Section at Binghamton (2004-2009)*
- *Principal Co-Organizer (with Alexsa Silva) of the Science Olympiad in Broome County (2006)*
- *Judge and contributor for the Science Olympiad in Broome County (2004, 2005, 2007 – 2011)*