

Dhruba Kumar Pattadar

2981 International drive, Apt. 2033C, Ypsilanti, MI, 48197, (502) 345-1829

dhrubaparradar@gmail.com

SUMMARY OF QUALIFICATIONS

- 5+ years of working experience in the field of metal nanoparticle synthesis, characterization and applications related to electrocatalysis and sensing.
- Extensive experience in electrochemistry, Scanning Electron microscopy (SEM), Atomic force microscopy (AFM) and Raman spectroscopy
- Experience in designing new nanomaterials for electrochemical and chemical applications.
- Expertise in writing and editing of scientific documents and communications for peer-reviewed research journals, conference symposia and departmental seminars.

EDUCATION

PhD in Chemistry

July 23-2019

University of Louisville, Louisville, KY, USA

Dissertation Title: “Stability and reactivity analysis of single metal and bimetallic nanostructures by anodic stripping voltammetry”

Graduate Advisor: Dr. Francis P. Zamborini

M.S. in Chemistry

October 2012

University of Dhaka, Dhaka, Bangladesh

B.S in Chemistry

November 2010

University of Dhaka, Dhaka, Bangladesh

RESEARCH EXPERIENCE

Publications.

- **Pattadar, D. K.**; Mainali, B. P.; Zamborini, F. P. Exceptional Electrochemical and Chemical Reactivity of Au₁₁ Cluster. (Manuscript in preparation).

- **Pattadar, D. K.**; Zamborini, F. P. Effect of Size, Coverage, and Dispersity on the Potential-Controlled Ostwald Ripening of Metal Nanoparticles (Submitted in Langmuir).
- **Pattadar, D. K.**; Mainali, B. P.; Sharma, J. N.; Zamborini, F. P. Understanding the Thermal Sintering Behavior of Sub 2 nm Diameter Gold Nanoparticles Synthesized with Weak Stabilizers. (Manuscript in preparation)
- **Pattadar, D. K.**; Zamborini, F. P. Atomic Arrangement Analysis of Bimetallic Cu₁/Au_x, NPs by Anodic Stripping Voltammetry. (Manuscript in preparation)
- Masitas, R.A.; **Pattadar, D. K.**; and Zamborini, F. P. "Size Dependent Galvanic Replacement between Au nanoparticles from 4 to 128 nm and PtCl₄2." Manuscript in preparation for Langmuir. (*Equal first author work*).
- Mainali, B.P.; **Pattadar, D. K.**; and Zamborini, F. P. "Size-Dependent Oxidation Behavior of Catalytic Gold Nanoparticles Coated with Alkanethiol Self- Assembled Monolayers (SAMs)." Manuscript in preparation for Langmuir.
- **Pattadar, D. K.**; Zamborini, F. P. Halide-Dependent Dealloying of Cu_x/Au_y Core/Shell Nanoparticles for Composition Analysis by Anodic Stripping Voltammetry. *J. Phys. Chem. C*. 2019, 123, 14, 9496-9505.
- **Pattadar, D. K.**; Sharma, J.N.; Mainali, B.P.; Zamborini, F. P. Anodic Stripping Electrochemical Analysis of Metal Nanoparticles. *Current Opinion in Electrochemistry*, 2019,13,14–156.
- **Pattadar, D. K.**; Zamborini, F. P. Size Stability Study of Catalytically Active Sub-2 nm Diameter Gold Nanoparticles Synthesized with Weak Stabilizers. *J. Am. Chem. Soc.* 2018, 140, 14126–14133
- Sharma, J. N.; **Pattadar, D.K.**; Mainali, B.P.; Zamborini, F. P. Size Determination of Metal Nanoparticles Based on Electrochemically Measured Surface-Area-to-Volume Ratios. *Anal. Chem.*, 2018, 90, 9308–9314. (*Equal first author contribution with Sharma, J.N.*).

Poster Presentations

- **Pattadar, D. K.**; Zamborini, F. P., Size-Dependent Electrochemical Ostwald Ripening of Au NPs. Pittcon March 18-21, 2019, Philadelphia, Pennsylvania.
- **Pattadar, D. K.**; Zamborini, F. P. Exploring the unique electrochemical and chemical reactivity of sub 2 nm diameter catalytic Au NPs. Kentucky Nano/AM Symposium, August 1-2, 2018, Louisville, Kentucky.

- **Pattadar, D. K.**; Zamborini, F. P. Analysis of Bimetallic Alloy Nanoparticle Composition and Atomic Arrangement by Stripping Voltammetry. Naff Symposium, March 23, 2018, University of Kentucky, Kentucky.
- **Pattadar, D. K.**; Zamborini, F. P. Determination of Bimetallic Alloy Nanoparticle Composition and Atomic Arrangement by Stripping Voltammetry. Gordon Research Seminar, January 6-7, 2018, Ventura, California.
- **Pattadar, D. K.**; Zamborini, F. P. Determination of Bimetallic Alloy Nanoparticle Composition and Atomic Arrangement by Stripping Voltammetry. Gordon Research Conference, January 8-12, 2018, Ventura, California.
- **Pattadar, D. K.**; Zamborini, F. P. Stripping Voltammetry Study of Citrate-Coated Cu/Au Core/Shell Bimetallic Nanoparticles (NPs). Pittcon March 5-9, 2017, Illinois, Chicago.
- Sharma, J.N.; **Pattadar, D.K.**; F Zamborini. Electrochemical determination of surface area-to-volume ratio for metal nanoparticle size analysis. American Chemical Society, March 18-22, 2018, New Orleans, Louisiana.
- Nambiar, H.N.; **Pattadar, D.K.**; F Zamborini. Aggregation-Dependent Oxidation of Different-Sized Gold Nanoparticles. SERMACS, October 31- November 2, 2018, Augusta, Georgia.

Oral presentations

- Size-Dependent Electrochemical Ostwald Ripening of Au NPs.” Graduate Student Regional Research Conference (GSRRC), February 27-28, 2019 at the University of Louisville.
- Exploring the unique electrochemical and chemical reactivity of sub 2 nm diameter catalytic Au Nanoparticles”. The Southeastern Regional Meeting of American Chemical Society, October 31-November 3, Augusta, Georgia.

TEACHING EXPERIENCE

My teaching experience is divided mainly into three different parts, my experience as an instructor, as a teaching assistant (T.A.) and my mentor activities with graduate students.

- **Instructor:** Taught CHEM 529 (Synthesis and Analysis II) class as co-lead instructor in the Department of Chemistry at the University of Louisville. My responsibilities included preparing classes, exams, homeworks, lab practices, lectures as well as grading exams, homework and lab reports.
- **Mentoring:** Mentored fellow graduate students Badri Mainali, Hari Nambiathan and Jay Sharma. They were trained in the synthesis of 0.5 to 2 nm Au clusters and citrate-coated Au

NPs from 4-50 nm in diameter, UV-vis Spectroscopy, Linear Sweep Voltammetry (LSV), Cyclic Voltammetry (CV), Chronocoulometry (CC), Chronoamperometry (CA) and Scanning Electron Microscopy (SEM). As a result, we are co-authors in many of the publications shown in my publications list.

- **Teaching Assistant:** Taught Introduction to Chemical Analysis I-IV (CHEM 207, CHEM 208, CHEM 209, CHEM 210) and Synthesis and Analysis II (CHEM 529) class as a teaching assistant in the Department of Chemistry at the University of Louisville. My responsibilities involved setting up labs, teaching lab practices, holding office hours to meet with students, and grading of lab reports and quizzes.

AWARDS

- Society for Electroanalytical Chemistry (SEAC) travel award March 2019, Pittcon, Philadelphia, PA.
- Graduate Network in Arts and Sciences (GNAS) travel award, University of Louisville, January 2019.
- Southeastern Regional Meeting of American Chemical Society (SERMACS) travel award for graduate student, SERMACS, October 2018.
- Graduate Student Council travel award (GSC), University of Louisville, January 2018.

REFERENCES:

1. Dr. Francis P. Zamborini, Professor, University of Louisville
Email: f.zamborini@louisville.edu; Phone: (502) 852-6550
2. Dr. Craig A. Grapperhaus, Professor and Chair, University of Louisville
Email: grapperhaus@louisville.edu; Phone: (502) 852-5932
3. Dr. Gamini Sumansekera, Professor, University of Louisville
Email: gamini.sumanasekera@louisville.edu; Phone: (502)-852-1558
4. Dr. Farshid Ramezanipour, Assistant Professor, University of Louisville
Email: farshid.ramezanipour@louisville.edu; Phone: (502)-852-7061