

Curriculum Vitae
Dr. Rajeev B Dabke
Department of Chemistry
4225 University Avenue
Columbus State University
Columbus, GA 31907
(Tel: 706 569 3029 Fax: 706 569 3133)
Email: dabke_rajeev@columbusstate.edu
February 2019

PERSONAL INFORMATION:

Rajeev B Dabke
Academic Rank: Professor (*tenured*), Department of Chemistry

Citizenship: US
Nation of Origin: India

EDUCATION:

PhD: Department of Chemistry, University of Pune, Pune 411007, India
Subject: Physical Chemistry, Supervisor: Professor T.S. Rao
Thesis Title: Studies on the Inhibition of Oxidation of Hemoglobin from Kinetic Measurement

MS: Department of Chemistry, University of Pune, Pune 411007, India
Major: Physical Chemistry

BS: Department of Chemistry, Fergusson College, Pune 411004, India
Major: Chemistry

RECENT ACADEMIC APPOINTMENTS AND OTHER SIGNIFICANT WORK EXPERIENCE:

2015- : Professor of Chemistry
2010-2015 : Associate Professor of Chemistry
Department of Chemistry, Columbus State University, Columbus, GA 31907
Teaching Responsibilities: General Chemistry, Survey of Chemistry, Physical Chemistry, and Corresponding Laboratory Courses

2003- 2009: Assistant Professor of Chemistry
Department of Chemistry, Columbus State University, Columbus, GA 31907
Teaching Responsibilities: General Chemistry, Survey of Chemistry, Physical Chemistry, and Corresponding Laboratory Courses

2002- 2003: Assistant Professor of Chemistry (*on contract*)
Department of Chemistry, Columbus State University, Columbus, GA 31907
Teaching Responsibilities: General Chemistry, Survey of Chemistry, Physical Chemistry, and Corresponding Laboratory Courses

Postdoctoral Research Associate

Department of Chemistry, University of California, Riverside CA 92521

Supervisors: Professors Werner G Kuhr and David F Bocian

Project Title: Electrochemical Characterization of Redox Self-Assembled Monolayers for Molecular Memory Applications

Lecturer in Physical Chemistry

Department of Chemistry, University of Mumbai, Mumbai (formerly Bombay) 400 098, India

Teaching Responsibilities: Physical Chemistry- Thermodynamics, Electrochemistry (ionics),

Fundamental Nuclear Chemistry and laboratory courses in Physical Chemistry

(equilibrium, kinetics, and electrochemistry)

Postdoctoral Research Associate

Department of Chemistry, Indian Institute of Technology, Powai, Mumbai 400 076, India

Supervisor: Professor A. Q. Contractor

Project Title: Electrochemical Studies on the Molecular Electronic Devices

Junior Research Fellowship (Special grant program for the PhD research work sponsored by the University Grants Commission, India)

Department of Chemistry, University of Pune, Pune 411007, India

FIELD(S) or AREA(S) OF SPECIAL INTEREST WITHIN DISCIPLINE OR PROFESSION:

1. Electrochemical methods of analysis
2. Undergraduate chemistry curriculum development in the area of general chemistry and physical chemistry
3. Undergraduate chemistry laboratory experience enhancement, particularly in the area of electrochemistry
4. Hands-on activities and instructional method development for visually impaired students

TEACHING:

- Teaching a graduate course titled “electrochemical methods”
- Teaching General Chemistry, Survey of Chemistry, and Physical Chemistry (lecture and laboratory course) since 2002
- Prior teaching experience includes Physical Chemistry and Basic Electrochemistry, and Applied Electrochemistry (1996-1999)
- Development of new undergraduate experiments in the area of Physical Chemistry, Quantitative Analysis, and General Chemistry (see list of publications)
- Development of hands-on activities and demonstrations for high school and undergraduate students
- Development of hands-on learning modules for blind and visually impaired students

PROFESSIONAL ACTIVITIES:

Publications:

A list of publications (*affiliation with the Columbus State University, Columbus, GA*)

“Feasibility of Performing Concurrent Coulometric Titrations Using a Multicompartment Electrolysis Cell” Shaquitha Harris, Jaimie Gonzales, Samuel Melaku, and Rajeev B. Dabke *ACS Omega*, **2019**, *4* (2), pp 3684–3689. (DOI: 10.1021/acsomega.8b03141) (*ACS Author Choice, Peer Reviewed–Invited Submission*)

“Feasibility of Using an Electrolysis Cell for Quantification of the Electrolytic Products of Water from Gravimetric Measurement” Samuel Melaku, Zewdu Gebeyehu, and Rajeev B. Dabke *Journal of Analytical Methods in Chemistry* **2018**, *2018*, 1–5. (DOI:10.1155/2018/2681796)

“Interlocking Toy Building Blocks as Hands-On Learning Modules for Blind and Visually Impaired Chemistry Students” Samuel Melaku, James O. Schreck, Kameron Griffin, and Rajeev B. Dabke *J. Chem. Educ.* **2016**, *93* (6), 1049–1055. (DOI: 10.1021/acs.jchemed.5b00252) (*ACS Author Choice Article*)

“Demonstrating Close-packing of Atoms Using Spherical Bubble Gums” Gebeyehu, Z.; Dabke, R. B. *SINET: Ethiop. J. Sci.* **2015**, *37*(1), 69–72.

“Quantitative Cathodic Preparation of Selected Aqueous Reagents Used in an Undergraduate Laboratory” Samuel Melaku and Rajeev B. Dabke *Journal of Chemical Education* **2015**, *92* (5), 958–961.

“An Alternative Approach for Preparing and Standardizing Some Common Aqueous Reagents Used in an Undergraduate Laboratory” Samuel Melaku and Rajeev B. Dabke *Journal of Chemical Education* **2014**, *91* (9), 1451–1454.

“Volumetric Titrations Using Electrolytically Generated Reagents for the Determination of Ascorbic Acid and Iron in Dietary Supplement Tablets: An Undergraduate Laboratory Experiment” Christopher Scanlon, Zewdu Gebeyehu, Kameron Griffin, and Rajeev B. Dabke *Journal of Chemical Education* **2014**, *91* (6), 898–901.

“An Alternative Approach to Titrating $\text{Fe}^{2+}(\text{aq})$ in Dietary Supplement Tablets Using Electrolytically Produced $\text{Ce}^{4+}(\text{aq})$ ” Huirui Washington, Christopher Scanlon, Samuel Melaku, James O. Schreck, and Rajeev B. Dabke *The Chemical Educator* **2014**, *19*, 153-156.

“Helping Students Visualize the Electrolysis of Water by Using Acid-Base Indicators to Create Colorful Designs” Rajeev B. Dabke, James O. Schreck, Jacqueline McGuire, Eunhye Claire Cho *The Chemical Educator* **2013**, *18*, 287–289.

“Determining the Transference Number of $\text{H}^+(\text{aq})$ by a Modified Moving Boundary Method: A Directed Study for the Undergraduate Physical Chemistry Laboratory” Rajeev B. Dabke, Zewdu Gebeyehu, Jonathan Padelford *Journal of Chemical Education* **2012**, *89*, 1600-1603.

“Analysis of Ascorbic Acid in Supplement Tablets from the Mole Ratios of the Electrolytic Products: An Experiment for the Undergraduate Laboratory” Rajeev B Dabke, Zewdu Gebeyehu, Nicole Ippolito *The Chemical Educator* **2012**, *17*, 152-156.

“Using Mole Ratios of Electrolytic Products of Water for Analysis of Household Vinegar: An Experiment for the Undergraduate Physical Chemistry Laboratory” Rajeev B. Dabke and Zewdu Gebeyehu *Journal of Chemical Education* **2012**, *89* (9), 1198-1200.

“Coulometric Analysis Experiment for the Undergraduate Chemistry Laboratory” Rajeev B Dabke, Zewdu Gebeyehu, Ryan Thor *Journal of Chemical Education* **2011**, *88* (12), 1707–1710.

“Analysis of Household Products: Coulometric Titration Experiment in the Undergraduate Laboratory” Rajeev B Dabke, Zewdu Gebeyehu, Mary Petermann, Napoleon Johnson, Jr., and Krutik Patel *The Chemical Educator* **2011**, *16*, 160-163.

“A Versatile Apparatus for a Laboratory Demonstration of Anodic and Cathodic Reactions” Rajeev B Dabke and Josue Scott *The Chemical Educator* **2010**, *15*, 36-38. (DOI 10.1007/s00897102258a)

“Using Magnets, Paper Clips, and Ball Bearings to Explore the Shapes of Molecules” Rajeev B Dabke and Zewdu Gebeyehu *Journal of College Science Teaching* **2010**, *40* (2), 70-73.

Recent Presentations at Professional Meetings:

Presented a paper “Developing Undergraduate Laboratory Curriculum in the Area of Electrochemistry” at the ‘International Conference on Chemical Education (i.e., ICCE 2018)’ at the University of Sydney, Sydney, Australia (July 11, 2018).

Presented a paper “Enhancing Hand-on Learning Experience in an Undergraduate Chemistry Classroom and Laboratory” at the ‘Middle Georgia ACS local section seminar’ at Middle Georgia State University, Macon, GA (April 25, 2018: *Invited talk*).

Presented a paper “Development of Undergraduate Laboratory Experiments in the Area of Electrochemistry” at ChemEd 2017 at South Dakota State University, Brookings, SD (July 2017).

Presented a paper “Developing Hands-on learning modules for blind and visually impaired high school and undergraduate chemistry students” at ACS 2017 Spring meeting at San Francisco, CA (April, 2017).

Presented a paper “Hands-on learning modules for blind and visually impaired chemistry students” at BCCE 2016 at the University of Northern Colorado, Greeley, CO (July 31-August 3, 2016).

Rite of Passage Presentation: Columbus State University, Columbus, GA (October 8, 2015).

Presented a paper “Electrolytic Reactions of Reagent Precursors for Preparation and Standardization of Commonly Used Reagents in an Undergraduate Laboratory” at ACS 2015 Spring meeting at Denver, CO (March, 2015).

Presented a paper “Exploring the products of electrolysis: An undergraduate laboratory experiment” at BCCE 2014 at the Grand Valley State University, Allendale, Michigan (August, 2014).

Presented a paper “Improving Hands-on Experience in an Undergraduate Chemistry Laboratory” at the Department of Chemistry, Indian Institute of Technology, Mumbai (formerly Bombay), India (July, 2014: *Invited talk*)

Presented a paper “Combining Chemistry with Art: Employing Acid-Base Indicators to Illustrate the Electrolysis of Water” at ChemEd 2013 at the University of Waterloo, Waterloo, Canada (August, 2013).

Presented a paper “Electrolysis of Water: A Demonstration for Middle, High School, and First Year Undergraduate Students” at 245th ACS National Meeting, Spring 2013, New Orleans, (April, 2013).

Presented a paper “Electrolytic Chemical Reactions: Demonstrations for High School and Undergraduate Chemistry Laboratory” at BCCE 2012 (Biennial Conference on Chemical Education), Pennsylvania State University, University Park, PA (July-August, 2012)

Presented a paper “Using Mole Ratios of Electrolytic Products of Water: A Modified Coulometric Analysis Experiment in the Undergraduate Laboratory” at 243rd ACS National Meeting, Spring 2012, San Diego, CA (March, 2012).

Presented a paper “Development of Undergraduate Curriculum in the Area of Experimental Physical Chemistry” at the Math and Science Learning Center, Columbus State University, Columbus, GA 31907 (February, 2012).

Presented a paper “Development of Electrochemistry Experiments for Undergraduate Students” at the Department of Earth and Space Sciences at the Fall Seminar Series, Columbus State University, Columbus, GA 31907 (November, 2011).

Presented a paper “Experiment on the coulometric analysis in the undergraduate laboratory” at 242nd ACS National Meeting, Denver, CO (August-September, 2011).

Presented a paper “Chemistry for Visually Impaired Community: Developing Periodic Table of Elements Using Touch Screen Tablet PC” at the ACS National Meeting, San Francisco, CA (March, 2010).

Presented a paper “Improving Electrochemistry Experience in High School and Undergraduate Laboratories” at SERMACS, San Juan, Puerto Rico (October, 2009).

Presented a paper “American Chemical Society’s Requirements for the Bachelor’s Chemistry Program Approval” as a Department of Chemistry Seminar (Columbus State University) (October, 2009).

Presented a paper on “Performing Demonstrations and Improving ‘Hands-on’ Chemistry Experience of High School Students”. The presentation was sponsored by COLS- STEM mini-grant project (Math Science Learning Center, Columbus State University, May, 2009).

Outreach, Committees, and Service:

Serving on various departmental and university committees, since 2002.

Serving on the ACS General Chemistry-II Exams Committee, beginning Fall 2018.

Participating in various outreach activities in chemistry education in community, since 2002.

Participating in activities for visually impaired high school and undergraduate chemistry students), since 2014.

Manuscripts reviewer for the journals related to the Chemistry Education, since 2014 (reviewed >25 journal manuscripts).

Reviewing General Chemistry and Physical Chemistry Text Book Chapters, since 2004 (reviewed >30 book chapters).