

Anahita Izadyar

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Associate Professor
Chemistry and physics department
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Education

Shiraz University of Iran	Chemistry	B.S. 1994
Shiraz University of Iran	Analytical Chemistry	M.S. 2000
Shiraz University of Iran	Analytical Chemistry	Ph.D. 2008

Appointments

2018–	Associate Professor of Chemistry, Arkansas State University (A-State) Department of Chemistry and Physics
2012–2018	Assistant Professor of Chemistry, Arkansas State University (A-State) Department of Chemistry and Physics
2009–2012	Postdoctoral Fellow, The University of Pittsburgh Department of Chemistry, Advisor: Professor Shigeru Amemiya
2006–2008	Visiting scholar, The University of Texas at Austin Center for Electrochemistry, Department of Chemistry and Biochemistry, Advisor: Professor Allen J. Bard

Institutional Responsibilities

- Teaching duties at the undergraduate and graduate levels.
- Supervising undergraduate and graduate students research/thesis projects.
- Leading of an independent research group.
- Service duties at the department, college and university level.

Teaching Activities

General chemistry I: bachelor freshman level course, 3 credits per semester.

General chemistry II: bachelor freshman level course, 3 credits per semester.

Quantitative Analysis: bachelor junior and senior level course 3 credits lecture and one credit laboratory per semester.

Instrumentation: Senior level course and Masters level course ,3 credits lecture and one credit laboratory per semester.

Advanced Analytical Chemistry: Masters level course, 3 credits per semester.

Green Chemistry: Ph.D. and Masters level course, semester, 3 credits per semester. I developed Green Chemistry (ESCI 6343) as a new course, a graduate course for the Environmental Science Ph.D. (EVS) program. The interdisciplinary nature of this course helps students recognize how to apply principles and methods from one field to another. Moreover, students understand how the future can be different by identifying the appropriate reagents, reactions, and technologies that should be and realistically could be replaced by green alternatives.

Peer- Reviewed Publications

- (1) **Izadyar A.**, Van M. V., Miranda M., Weatherford S., Hood E. E., Electrocatalytic Effect of Recombinant Mn Peroxidase from Corn on Microbiosensors to Detect Glucose, *Biocatalysis and Agricultural Biotechnology* 43 (2022) 102445.
- (2) **Izadyar A.**, Van M. V., Miranda M., Weatherford S., Hood E. E.(2022) Development of a Highly Sensitive Glucose Nanocomposite Biosensor Based on Recombinant Enzyme from Corn", *Journal of the Science of Food and Agriculture*. 102: 6530-6538
- (3) **Izadyar A.**, Rodriguez K.A., Van, M.N., Tran U., and Hood E. E. "A bienzymatic amperometric glucose biosensor based on using a novel recombinant Mn peroxidase from corn and glucose oxidase with a Nafion membrane". *Journal of Electroanalytical Chemistry* **2021**, 895, 115387.
- (4) **Izadyar A.**, Tran U., Hood E. E. "Recombinant Mn Peroxidase from Corn Grain Has an Excellent Electrocatalytic Effect in a Designed Amperometric Biosensor to Detect Hydrogen Peroxide at Low Concentrations" *ACS Sustainable Chem. Eng.* **2019**, 7, 19434–19441.
- (5) **Izadyar A.**, Hershberger J. C., Robert R. "Voltammetric Assessment of Ions Transfer at Ionophore-Graphene Based Polymeric Membranes" *Electroanalysis*, **2018**, 30(11), 2580-2583.
- (6) **Izadyar A.** "Stripping Voltammetry at the Interface between Two Immiscible Electrolyte Solutions: A Review Paper" *Electroanalysis*, **2018**, 30(10), 2210-2221,
- (7) Guzinski M., Jarvis J. M. D’Orazio P., **Izadyar A.**, Pendley B. D., Lindner E. "Solid Contact pH Sensor without CO₂ Interference with a Super Hydrophobic PEDOT-C14 as Solid Contact: the Ultimate "Water Layer" Test". *Analytical Chemistry*, **2017**, 89 (16), 8468–8475.
- (8) **Izadyar A.**, Al-Amood F., Ranawaka Arachchige D. "Ion transfer stripping voltammetry to detect Nanomolar concentrations of Cr (VI) in drinking water" *J. Electroanalytical Chemistry*, **2016**, 782, 43–49.
- (9) **Izadyar A.**, Ranawaka Arachchige D., Cornwell H., and Hershberger J. L. "Ion Transfer Stripping Voltammetry for the Detection of Nanomolar Levels of Fluoxetine, Citalopram, and Sertraline in Tap and River Water Samples" *Sensors and Actuators B: Chemical*, **2016**, 223,226-233.
- (10) Kim J., **Izadyar A.**, Shen M., Ishimatsu R., Amemiya S. "Ion Permeability of the Nuclear Pore Complex and Ion-Induced Macromolecular Permeation as Studied by Scanning Electrochemical and Fluorescence Microscopy." *Analytical Chemistry*, **2014**, 86, 2090–2098.
- (11) Amemiya S., Kim J., **Izadyar A.**, Kabagambe B., Shen M., Ishimatsu R. "Electrochemical Sensing and Imaging Based on Ion Transfer at Liquid/Liquid Interfaces" *Electrochimica Acta*, **2013**, 110, 836-845.
- (12) Kim J., **Izadyar A.**, Nioradze N., Amemiya S. "Nanoscale Mechanism of Molecular Transport through the Nuclear Pore Complex as Studied by Scanning Electrochemical Microscopy" *Journal of the American Chemical Society*, **2013**,135, 2321–2329.
- (13) Kabagambe B., **Izadyar A.**, Amemiya S. "Stripping voltammetry of nanomolar potassium and ammonium ions using a valinomycin-doped double-polymer electrode" *Analytical Chemistry*, **2012**, 84, 7979-86.
- (14) **Izadyar A.**, Kim Y., Ward Muscatello M.M., and Amemiya S. "Double-Polymer- Modified Pencil Lead for Stripping Voltammetry of Perchlorate in Drinking Water" *Journal of Chemical Education*, **2012**, 89, 1323–1326.
- (15) Ishimatsu R., **Izadyar A.**, Kabagambe B., Kim Y., Kim J., Amemiya S. "Electrochemical Mechanism of Ion–Ionophore Recognition at Plasticized Polymer Membrane / Water

- Interfaces.” *Journal of the American Chemical Society*, 2011, 133, 16300–16308.
- (16) **Izadyar A.**, Liu S. T., Chou P. T., Bard A. J. “Electrogenerated Chemiluminescence (ECL) of 2-Oxa-bicyclo [3.3.0] octa-4,8-diene-3,6-dione (OBDD).” *J. Electroanalytical Chemistry*, **2009**, 635, 7–12.
- (17) **Izadyar A.**, Omer K. M., Liu Y., Chen S., Xu X., Bard A. J. “ Electrochemistry and Electrogenerated Chemiluminescence of Quinoxaline Derivatives” *Journal of Physical Chemistry C* **2008**, 112 50, 20027–20032.
- (18) Abbaspour A., **Izadyar A.** “Platinum Coated Electrode Based on Bentonite Carbon Composite for Lead Detection as an Environmental Sensor” *Talanta* **2007**, 71, 887– 892.
- (19) Abbaspour A., **Izadyar A.**, “Multi Wall Carbon Nanotube Composite Coated Platinum Electrode as a Sensitive Sensor for Detection of Cr (III) in Natural Waters” *Analytical and Bioanalytical Chemistry* **2006**, 386, 1559–1565.
- (20) Abbaspour A., **Izadyar A.**, Shargei H. “Carbon Composition PVC Based Membrane in a Highly Selective and Sensitive Coated Wire Electrode for Silver Ion” *Analytica Chimica Acta*; **2004**, 525, 91–96.
- (21) Abbaspour A., **Izadyar A.** “Chromium (III) Ion Selective Electrode Based on Dimethylamin Azobenzene.” *Talanta* 2001, 53, 1009–1013.
- (22) Abbaspour A., **Izadyar A.** “Highly Selective Electrode for Nickel (II) Ion Based on 1-5 Diphenylthiocarbazon” *Microchemical Journal* **2001**, 69, 7–11.

Synergistic Activities (Memberships on panels, boards, and individual scientific reviewing activities)

- Textbook Manuscript Reviewer “Introduction to Green Chemistry, Third Edition, by Albert Matlack and John Andraos, 2020, CRC Press Taylor & Francis group.
- Editorial Board member of the MDPI ((Multidisciplinary Digital Publishing Institute)) journals. (2019-)
https://www.mdpi.com/journal/chemistry/submission_reviewers
- Invited to serve as a reviewer for the National Science Foundation (NSF), 2023 .
- Article Reviewer for the *Chemical Record* journal (fall 2020)
- Article Reviewer for *Journal of Analytical chemistry* (spring 2020)
- Article Reviewer for *Journal of Pharmaceuticals* (spring 2020)
- Article Reviewer for *Journal of Crystals* (spring 2021)
- Article Reviewer for materials chemistry and physics (fall 2019)
- Article Reviewer for *International Journal of Molecular Sciences* (spring 2019)
- Article Reviewer for *Journal of Nanomaterials* (spring 2019, spring 2020)
- Article Reviewer for the *Journal of Sensors* (fall 2018, spring 2019, fall 2019, summer 2020)
- Article Reviewer for the *Journal of Electroanalytical Chemistry* (fall 2017, fall 2018, spring 2019)
- Article Reviewer for the *Journal of Electrochimica Acta* (total 14 across fall 2017, spring 2018, fall 2018, spring 2019, fall 2019, spring 2020, summer 2020, fall 2020)
- Article Reviewer for the *Journal of Molecules* (fall 2018)
- Article Reviewer for the *Journal of Bioelectrochemistry* (fall 2018, fall 2019)
- Article Reviewer for the *Food Analytical Methods Journal* (2015)
- Article Reviewer for the *Journal of ChemElectroChem* (fall 2021)
- Article Reviewer for the *Journal of Nanostructure in chemistry* (spring 2021)
- Article Reviewer for the *National Conference on Undergraduate Research* (NCUR; 2017)
- Article Reviewer for the *Electrochemistry Communications* journal (2022)
- Article Reviewer for the *biosensors* journal (spring 2022 , summer 2022, fall 2022)

- Article Reviewer for the *Chemosensors* journal (2022)
- Proposal Reviewer for the Student Undergraduate Research Fellowship (SURF) program (total 21; 2017, 2018, 2019)
- Proposal Reviewer for the *Swiss National Science Foundation* (SNSF; total 2 across fall 2017; fall 2021)
- Thesis Chair for two Graduate Students (A-State; 2016)
- Thesis Chair, Honor Undergraduate Student (A-State; 2015)
- Judge at Symposium of Research, Scholarship and Creativity (A-State; 2016)
- Member of A-State Shared Governance Committee (2015–present)
- Member of A-State Faculty Achievement Awards Committee (2020– present)
- Member of Department graduate students review committee (2018–present)
- Member of various university committees at A-State (Graduate Program in Environmental Sciences, 2012–present; Analytical Chemistry Curriculum Committee, 2012–present; General Chemistry Committee, 2012–present; Materials Sciences Group, 2013–2015; two Comprehensive Examination Committees, 2013).
- Member of A-State College Diversity Plan Committee (2022)
- Member of A-State College Graduate Council (2022-2023)
- Hiring Committee Member for various positions at Arkansas State University (Organic Faculty Search Committee, 2012; Organic Chemistry Instructor Search, 2013)
- Summer Institute for Research Development (SIRD) workshop (A-State, June 2014)
- Summer Institute for Teaching and Learning for Innovation, Inspiration and Creativity workshop (A-State, June 2019)
- A-State Proposal Writing Workshop (Spring 2020)
- LEARN@STATE workshop (Spring 2020), Get students to focus on learning instead of grades: Metacognition is the key!
- Grant Writing Workshop sponsored by Arkansas IDeA Network of Biomedical Research Excellence (Arkansas INBRE) (June 2019)
- The General Education Program workshop (A-State, July 2019)
- Arkansas Bioscience Institute (ABI) Undergraduate Research Scholar Program – Mentor (2019-2020).
- Reviewer of six abstract for Create @ State (spring (2021), is important for co-curricular student-learning assessment reporting to the Higher Learning Commission at A-State.
- Reviewer of four abstract for Create @ State (spring (2022), is important for co-curricular student-learning assessment reporting to the Higher Learning Commission at A-State.
- Member, American Chemical Society (2007–present)
- Member, Arkansas Academy of Science (2013–present)
- Project director, as a graduate student, at the Shiraz oil refinery (2004–2006)
- Clinical Laboratory research, as a graduate student, on HbA1c testing methodology (2002–2004)
- Collaboration with Water Analytics Inc on fabrication a commercial sensor. (2017–2019)

Awards and Grant

- Arkansas Biosciences Institute grant (2020-2022)
- National Institute of Food and Agriculture (USDA/NIFA) grant as external funding, (2021-2024)
- Nathan Deutsch Faculty Development awards (A-State, 2018)

- GRADES-SR Award from the College of Science and Mathematics Dean's office (A-State, 2014 and 2016)
- Provost Scholar Award (A-State, 2014)
- The Arkansas Science & Technology Authority Grant (2014)
- Faculty Research Award (A-State, 2013)
- Shiraz University Scholarship for Top Graduate Student (2006–2008)

Supervision of Undergraduate and Graduate Researchers

Graduate Student Research and Thesis Advisors

- Dinusha Ranawaka Arachchige (MSc), current position (PhD student)
- Fatma Al-Amoodly (MSc), current position (chemistry instructor at A-State)
- Amanda Pillow (MSc), current position (High school teacher)

Honors Thesis Advisor (Undergraduate)

- Hayden Cornwell

Research Advisor (Undergraduate)

- 1 Tanner Horton (Teacher at The GLOBE Academy)
- 2 Hayden Cornwell (Recognized as an outstanding undergraduate student in the College of Sciences and Mathematics at A-State, graduated Magna Cum Laude) (Process Scientist at AMPAC Fine Chemicals)
- 3 Cody Anderson (Recognized as an outstanding graduate student in the College of Sciences and Mathematics at A-State, Osteopathic Medical Student)
- 4 Anna Pittman (undergraduate)
- 5 Giang Truong Hoang (A-State Student Research Ambassador for 2017–2018, undergraduate)
- 6 Anaiya Lowe (undergraduate)
- 7 Robert Rogers (First-place winner, undergraduate poster presentation)
- 8 Uyen Tran (undergraduate)
- 9 Kayleigh Amber Rodriguez (accepted in UAMS Medical school, undergraduate)
- 10 Erin Nicholas (accepted in PhD program, undergraduate)
- 11 My Ni Thi Van (Student employee of the year, undergraduate)
- 12 Marcela Miranda (Student employee of the year, accepted in MS program, international undergraduate)
- 13 Sindhuja Vemireddy (undergraduate)
- 14 Clay Aureli (undergraduate)
- 15 Scout Weatherford (Student employee of the year, Current undergraduate)
- 16 Yarelhy Paola Gutierrez Salinas (Current international undergraduate)
- 17 James Andrew Goode (undergraduate)

Research Collaborators

Professor Alireza **Abbaspourrad**, (Department of Food Science, Cornell University); **Aquamatrix** Water Analytics, Inc.; Professor Hassan **Beyzavi**, (Department of Chemistry and Biochemistry, University of Arkansas); Professor Alexander **Biris** (Center for Integrative Nanotechnology, University of Arkansas); Professor Mark **Draganjac** (Department of Chemistry and Physics, Arkansas State University); Professor Elizabeth E.

Hood (Department of Agriculture, Arkansas State University); Dr. John C. **Hershberger** (Department of Chemistry and Physics, Arkansas State University); Professor Erno **Lindner** (Department of Biomedical Engineering, University of Memphis); Professor Tanja **McKay** (Director of Environmental Sciences, Professor of Entomology, Arkansas State University); Professor Shanlin **Pan** (University of Alabama); Dr. Mark **Spencer** (President of Water Analytics, Inc.).

Conferences

- Presentation (oral) #1** Ultrasensitive Electrochemical Sensors for Trace Ions: Environmental Analysis and Beyond Learned Forum: Science Departmental Seminar April 10, 2013, Arkansas State University, AR
- Presentation(oral) #2** Discovering new ion selectivity using pencil lead electrodes to enable detection of various pharmaceutical drugs as environmental contaminants Learned Forum: **34th annual undergraduate research conference** 22 February, 2014, University of Memphis, Memphis, TN
- Presentation (poster) #3** Pencil lead ion selective electrode to detect fluoxetine drug as pharmaceutical environmental contaminant (poster presentation) Learned Forum: 4 April, 2014, **98th annual meeting Arkansas Academy of Science**, Harding University, University of Central Arkansas, AR
- Presentation (oral) #4** Ion transfer stripping voltammetry for detection of drugs in real samples. Dinusha U. Ranawaka Arachchige. The Memphis section of the American Chemical will host the 2015 Combined Southwest Region Meeting and the **Southeastern Regional Meeting of the American Chemical Society**.
- Presentation (poster) #5**, “Ion Selective Electrodes to Detection Water Contaminants” Dinusha U. Ranawaka Arachchige, spring 2016, **Arkansas Soil & Water Conference** Student Poster Competition.
- Presentation(oral) #6** Sensitive Electrochemical Sensor to Detect Fluoxetine, Sertraline, and Citalopram in Environmental Samples, Hayden Cornwell, spring 2016, **Symposium of research, scholarship &creativity at A-state**
- Presentation (oral) #7** Ultra-sensitive electrochemical detection of Cr (VI) using double polymer membrane and Beyond, **The 68th Southeastern American Chemical Society** , Columbia, SC, 2017
- Presentation (poster) #8** Development Electrochemical Sensors using Graphene Based Ionophore-doped Double Polymeric Membrane to Monitoring Heavy Metals, Hoang, Giang Truong , spring 2017, **National Conference on Undergraduate Research (NCUR)** at the University of Memphis.
- Presentation (poster) #9** Applying Nano Sensors Using Reduced Graphene Oxide to Detect Phosphate, fall 2017,by Robert Rogers, **Arkansas STEM Posters at the Capitol Instructions for Presenters** at the Little Rock, AR
- Presentation (poster) #10** Nano Sensors modification for phosphate ion detection, spring 2018, by Robert Rogers, **Symposium of research, scholarship &creativity at A-state**, Arkansas state university, AR, 1th place winner undergraduate poster presentation.
- Attendance conference:** Selected as a Judge in the IDeA Network of Biomedical Research Excellence (INBRE) Conference, fall 2019, Fayetteville, Ar.
- Presentation (oral) #11** An Amperometric Glucose Sensor Using Recombinant Mn Peroxidase and Glucose Oxidase, spring (2021), by Kayleigh Rodríguez, and My Ni Thi Van, Create @ State.
- Presentation (oral) #12** Amperometric Biosensor for Glucose Determination Based on a Novel Recombinant Mn Peroxidase from Corn Cross-Linked to a Gold Electrode,

International Conference on Applied Chemistry, May 13-14, 2021 in Amsterdam, Netherlands.

Presentation (oral) #13 Electrochemical Technique to Fabricate Glucose Biosensor Using Enzyme Extract from Corn, spring (2021), by Kayleigh Rodríguez, Arkansas Academy of Science 2021 Meeting, April, 2021.

Presentation (oral) #14 Biosensor for Glucose Determination Based on a Novel Recombinant Mn Peroxidase (PPMP) from Corn Cross-linked to a modified Gold Electrode, fall (2021), by Anahita Izadyar, **American Chemical Society, Southwest Regional Meeting (SWRM)**, Austin, TX, 2021

Presentation (oral) #15 Electrochemical Glucose Biosensor, spring (2022), by Marcela Miranda, Create @ State.

Presentation (poster) #16 Bienzymatic Nanocomposites Biosensors to Measure Glucose, spring (2022), by, My Ni Van, Marcela Miranda, Scout Weatherford, Marcela Miranda, Create @ State, it won Dean's Award for Undergraduate Poster Presentation.

Presentation (oral) #17 Electrochemical study of Recombinant Mn Peroxidase from Corn on Disposable Screen Printed biosensor to Detect Glucose, Fall (2022), by Scout Weatherford, INBRE Research Conference.