Aswathi Kandampully Sahadevan

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EDUCATION

Texas A&M University — *College Station, TX, USA*
Ph.D. in Chemistry (Advisor: Prof. Lane A. Baker) — *Aug 2024 – Present*
- GPA: 4.00/4.00
- Relevant coursework: Analytical Chemistry, Analytical Spectroscopy, Biological Chemistry, Quantum Mechanics

Indian Institute of Technology Guwahati — *Assam, India*
M.Sc. in Chemistry — *Jul 2021 – Jul 2023*
- CPI: 9.01/10
- Relevant coursework: Electrochemistry, Applications of Spectroscopy, Chemical Kinetics and Dynamics, Statistical Thermodynamics, Computational Chemistry, Supramolecular Chemistry

University of Calicut — *Kerala, India*
B.Sc. in Chemistry — *Jul 2018 – Jul 2021*
- CGPA: 9.18/10 (A+ grade); ranked 11th in the university

RESEARCH EXPERIENCE

Texas A&M University, Baker Lab — *College Station, TX, USA*
Graduate Research Assistant — *Oct 2024 – Present*

Nanoscale investigation of the relationship between ion conductance and E-cadherin dynamics during Ca^{2+} chelation in epithelial cells
- Mapped topography and apparent ion conductance of MDCKII epithelial cells using potentiometric scanning ion conductance microscopy (P-SICM).
- Expressed E-cadherin-GFP in MDCKII cells via lipofection to visualize E-cadherin dynamics.

Development of an in vitro blood–brain barrier model and its characterization using P-SICM
- Established cell culture under flow in microfluidic devices in collaboration with the Martin group (Saint Louis University).
- Developing P-SICM imaging of topography and apparent conductance of cells under flow.

Indian Institute of Technology Madras — *Tamil Nadu, India*
Research Project (Supervisor: Prof. T. Pradeep) — *Jun 2023 – Apr 2024*

Electrospray-assisted nanocluster loading enhances electrocatalytic nitrate reduction to ammonia
- Loaded Co_6S_8 nanoclusters onto carbon paper by electrospray ionization and characterized the resulting morphological changes by scanning electron microscopy (SEM).
- Evaluated electrocatalytic nitrate reduction activity of the fabricated electrodes using linear sweep voltammetry (LSV) and cyclic voltammetry (CV).
- Quantified ammonia production using UV–visible spectroscopy.

Ambient microdroplet synthesis of Pt and Pt–Cu nanorods for electrocatalytic nitrate reduction
- Synthesized Pt and Pt–Cu nanorods by electrospraying metal precursor solutions onto different substrates (water, carbon paper, aluminium, and ITO glass).
- Evaluated electrocatalytic nitrate reduction to ammonia using LSV and chronoamperometry, and quantified ammonia by UV–visible spectroscopy.

Indian Institute of Technology Guwahati — *Assam, India*
M.Sc. Thesis (Supervisor: Prof. Mohd. Qureshi) — *Jan 2023 – Apr 2023*

Tweaking the double-exchange pair for enhanced electrocatalytic activity in Sr-doped lanthanum manganite
- Synthesized strontium-doped lanthanum manganite by solid-state synthesis and doped it with ruthenium.
- Characterized materials using X-ray diffraction (XRD), energy-dispersive X-ray spectroscopy (EDX), X-ray photoelectron spectroscopy (XPS), and ultraviolet photoelectron spectroscopy (UPS).
- Evaluated electrocatalytic water oxidation activity using electrochemical techniques including electrochemical impedance spectroscopy (EIS).

- Wrote and defended the M.Sc. thesis before a three-member committee.

Indian Institute of Technology Guwahati *Assam, India*
Research Project (Supervisor: Prof. Mohd. Qureshi) *Aug 2022 – Dec 2022*

Enhancing photoelectrocatalytic properties of $ZnFe_2O_4$ through gallium doping

- Synthesized $ZnFe_2O_4$ by microwave combustion and doped it with gallium.
- Fabricated photoelectrodes on FTO substrates by doctor-blade coating.
- Evaluated photoelectrochemical water-splitting activity using chronoamperometry and Mott–Schottky analysis.

University of Calicut *Kerala, India*
B.Sc. Project (Supervisor: Dr. Sr. Lovely Jacob A.) *Nov 2020 – Mar 2021*

A review of the potential effects of curcumin on coronavirus

- Reviewed published research on the potential effects of curcumin on coronavirus.
- Led a team of five in analyzing the literature and compiling the work into a thesis.

TEACHING EXPERIENCE

Texas A&M University, Department of Chemistry *College Station, TX, USA*
Graduate Teaching Assistant *Aug 2024 – Present*

- General Chemistry (CHEM 119 and CHEM 120)
- Analytical Chemistry II Laboratory

PUBLICATIONS

- **Kandampully, A.**; Leasor, C.; Baker, L. A. Characterization of Epithelial Ion Transport Using P-SICM. *Acc. Chem. Res.* Submitted.
- **Aswathi, K. S.**; Unni, K.; Mukhopadhyay, S.; Som, A.; Chowdhury, S.; Jana, S. K.; Sarkar, D.; Pradeep, T. Ambient Microdroplet Synthesis of Pt and Pt–Cu Nanorods from Homogeneous Solutions for Electrocatalytic Nitrate Reduction. *Nanoscale Horiz.* **2026**, *11* (4), 1053–1062. https://doi.org/10.1039/D5NH00572H
- Sahu, A.; **K. S., A.**; Rajak, A. K.; Naik, R.; Qureshi, M. Competing Double-Exchange/Super-Exchange Ordering for Enhanced Water Oxidation Kinetics. *Chem. Commun.* **2024**, *60* (16), 2236–2239. https://doi.org/10.1039/D3CC04484J

PRESENTATIONS

- **Kandampully, A.**; Baker, L. A. Nanoscale Investigation of the Relationship between Ion Conductance and E-Cadherin Dynamics. *Pittcon 2027*, Pittsburgh, PA, USA, April 24–28, 2027. Abstract submitted.

SKILLS

Scanning probe & electrochemistry: P-SICM, cyclic and linear sweep voltammetry, electrochemical impedance spectroscopy, chronoamperometry, Mott–Schottky analysis, electrode fabrication, electrospray deposition

Cell biology: Mammalian cell culture (MDCKII), lipofection, cell culture under flow in microfluidic devices, confocal microscopy

Materials characterization: SEM, XRD, EDX, XPS, UPS, UV–visible spectroscopy

Software: Microsoft Office, ChemDraw, OriginLab, Gaussian 09, GaussView; Windows, Linux

HONORS AND AWARDS

Ranked 11th, B.Sc. Chemistry, University of Calicut *2021*
All India Rank 453, Joint Admission Test for M.Sc. (IIT-JAM) *2021*
Comates Circle Meritorious Award, highest marks in the higher secondary examination (Bio-Science batch) *2018*