DR. SHAMBHULINGA ARALEKALLU

Assistant Professor-Jain University

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RESEARCH INTEREST

- Water electrolysis, Lithium-Ion batteries, Sodium Ion and Anion Shuttling Rechargeable Batteries
- Design and Fabrication of Fuel cells, Batteries, and Electrochemical Sensors.
- Electrochemistry (Energy conversion and storage devices).
- Synthesis of macrocycles and redox-active molecules

EDUCATION

- **PhD.** (2014-2018, Chemistry, ***VSK University-Ballari)***
- **M.Sc.** (2010-2012, Industrial Chemistry, First Class**,** ***VSK University, Ballari, India*****.**
- **B.Sc.** (2005-2008, PCM, Second Class, ***Veerashaiva College, Ballari, India***.)

Course	Institution	Year of passing	Subject	Score (%)
M.Sc	Main Campus, VSK University, Ballari	2012	Industrial Chemistry	**69.39**
B.Sc	Veerashaiva College, Ballari	2008	PCM	**52**
PUC	Govt. (Muncipal) PU College, Ballari,	2005	PCMB	**58.2**
SSLC	Veevekananda High School, Sirigeri	2003	SSLC	**71.52**

CURRENT OCCUPATION

Assistant Professor at Jain University, Bengaluru, India (March 6th, 2023 to present)

WORK EXPERIENCE

Position Held – ***Assistant Manager***, ACC Limited, Wadi Cement Works, Gulbarga District (July 2012 – October 2014).
Chemistry Lecturer at Veerashaiva College, Ballari *(August 2018-March 2019)*

UGC CSIR - Research Associate at the Dept. of Chemistry, Vijayanagara Sri Krishnadevaraya University, Ballari (01 April 2019 to 26th December 2020)

Postdoctoral Researcher at Hanynag University, South Korea (11th Jan 2021 to 28th Feb 2023)

TECHNICAL SKILLS

- **Devices:** PEMFC, DMFC, Rechargeable Batteries, pH meter,Amperometric sensors.
- **Operating Systems:** Windows (XP, Windows ***7/8/8.1/10***),
- **Graphical Languages:** Origin Pro 8.5 (Graph), SigmaPlot11.0,
- **Electrochemistry Tools:** PARSTAT 2273 Power Suite, BioLogic (EC-Lab), CHI

CHARACTERIZATION TECHNIQUES

UV-Visible, FTIR (Fourier Transform Infrared Spectrometer)**, SEM** (Scanning Electron Microscopy), **EDS** (Energy Dispersive Spectroscopy), **XRD** (X-Ray Diffraction), **UV** (UV/VI Spectroscopy), **FTIR** (Fourier Transform Infrared Spectroscopy), **QCM** (Quartz Crystal microscopy, QCA922A), **GITT** (Galvanostatic intermittent Titration Technique), **Cyclic Voltammetry** (CV, LSV, DCPA, Chronopotentiometry, Chronoamperometry). **EIS (**Electrochemical Impedance Spectroscopy).

CITATIONS (Google Scholar)

Citations	759
h-index	17
i10-index	24

PUBLICATIONS

Authors Title	Title	Journal Name	Year, Volume, Page	Impact Factor
1. **Shambhulinga Aralekallu**, Sowmyashree Hadimane, Manjunatha Nemakal, Lokesh Koodlur Sannegowda	Organic hybrid of cobalt phthalocyanine embedded graphene as an efficient catalyst for oxygen reduction reaction	Fuel	2024, 361, 130736	7.4
2. **Shambhulinga Aralekallu**, Lokesh K. S, Vijay Singh	Advanced Bifunctional Catalysts for Energy Production by Electrolysis of Earth-Abundant Water	Fuel	2024, 357, 129753	7.4
3. Preeti Mulimani, Mahesh P Bhat, Pravin Patil, **Shambhulinga Aralekallu**, Ravikumar Kapavarapu, Jingxian Yu, Mahaveer Kurkuri, Rajesh G Kalkhambkar	Colorimetric devices for naked-eye detection of Fe3+ and Cu2+: Optical properties, DFT calculations, and molecular docking studies	Journal of Water Process Engineering	2024, 59, 105030	7.0
4. **Shambhulinga Aralekallu**, Lokesh K. S, Vijay Singh	Developments in Electrocatalysts for Electrocatalytic Hydrogen Evolution Reaction with reference to bio-inspired phthalocyanines	International Journal of Hydrogen Energy	2023, 48, 16569-16592	7.2
5. **Shambhulinga Aralekallu**, Rajamouli B, Vijay Singh	Development of glass-based microfluidic devices: Fabrication and Biological applications	Materials and Design	2023, 225, 111517	9.417
6. Giddaerappa K, Prabhu CPK, **Shambhulinga Aralekallu,** Shantharaja, Naseem K, Ashwini C K, Lokesh K. S.*	Uranium phthalocyanine anchored acid-functionalized MWCNTs as efficient bifunctional electrocatalyst for water electrolysis	ACS Applied Nano Materials	2023, 6, 10, 8880-8893	5.9
7. K, Prabhu CPK, K. R. Naveen, Shivalingayya **Shambhulinga Aralekallu,**	Novel polymeric cobalt tetrabenzimidazole phtalocyanine for nanomolar detection of hydrogen peroxide	RSC Sustainability	2023, 1, 128-138	N/A

8. **Shambhulinga Aralekallu,** Young-Ho Ahn	Spinel-based Bifunctional Electrocatalyst for Water Electrolysis		Under construction	
9. **Shambhulinga Aralekallu,** Raju Thota, Jin Ho Bang*	Photoelectrochemical synthesis of Hydrogen Peroxide via 2e-ORR over Gold Nanoclusters		Under construction	
10. **Shambhulinga Aralekallu**, Manjunatha Nemakal, Lokesh Koodlur Sannegowda*	Dye Degradation of Hydroquinone by Zinc Phthalocyanine Complexes		Under construction	
11. **Shambhulinga Aralekallu**, Ravikumar T, Zahid M. B, Mruthyunjayachari C D, Neetu C D, Sanchayita M, Alagar Raja K, Musthafa O T*	Wireless Chemical Charging of Metal-ion Battery by Magnetic Particles	ACS Sustainable Chemistry and Engineering	2021, 10, 259-266	9.224
12. Sowmyashree Hadimane, **Shambhulinga Aralekallu**, Keshavananda Prabhu C P, Mirabbos Hojamberdiev, Lokesh Koodlur Sannegowda*	Bio-Inspired Precious-Metal-Free N4 Macrocycle as Electrocatalyst for Hydrogen Evolution Reaction	ACS Applied Energy Materials	2021, 10, 10826-10834	6.959
13. **Shambhulinga Aralekallu**, Veeresh A. Sajjan, Keshavananda Prabhu C P, Manjunatha Palanna, Mirabbos Hojamberdiev, Lokesh Koodlur Sannegowda*	Ni foam-supported azo linkage cobalt phthalocyanine as an efficient electrocatalyst for oxygen evolution reaction	Journal Power Sources	2020, 449, 227516	9.794
14. **Shambhulinga Aralekallu,** M Imadadulla, N Manjunath, P Manjunath, Dhanjai, K S Lokesh*	Synthesis of novel azo group substituted polymeric phthalocyanine for amperometric sensing of nitrite	Sensors and Actuaters B: Chemical	2018, 282, 417-425 (01.03.2019)	9.221
15. **Shambhulinga Aralekallu,** Ravikumar T, Pramod G, Mruthyunjayachari C D, Alagar Raja K, Shahid P S, K S Lokesh, Dr. Julio Sanchez and Musthafa O T*	Tuning the Interfacial Chemistry of Redox-Active Polymer for Bifunctional Probing	ChemElectroChem	2017, 4, 692-700 (12.01.2017)	4.782
16. **Shambhulinga Aralekallu**, Dr. Ravikumar T, Mruthyunjayachari C D, Alagar Raja K, Zahid Bhat, Shahid P S, K S Lokesh, Musthafa O. T*	A Single Chamber Direct Methanol Fuel Cell	Advanced Materials Interfaces	2017, 4, 1700321 (10.08.2017)	6.389
17. **Shambhulinga Aralekallu**, Giddaerappa, Manjunatha N, Imadadulla M, K S Lokesh*	Self-Assembled Monolayers of Reactive Difunctional Molecules on Nickel Electrodes	Surfaces and Interfaces	2019, 15, 19-25 (01.06.2019)	6.137

18. **Shambhulinga Aralekallu**, Manjunatha P, Keshavananda C P, Veeresh Sajjan, Sowmyashree H, Musthafa O. T, Lokesh Koodlur Sannegowda*	Biologically Inspired Catalyst for the Electrochemical Reduction of Hazardous Hexavalent Chromium	Dalton Transactions	2020, 49, 15061-15071	4.569
19. Keshavananda Prabhu C	Synthesis and characterization of	Sustainable Energy	2021, 5, 1448-	6.813

P, **Shambhulinga Aralekallu**, Manjunatha Nemakal, Manjunatha P, Veeresh A Sajjan, SharathKumar, Lokesh Koodlur Sannegowda	novel benzimidazole substituted cobalt phthalocyanine film layer embedded iron ore nano particles and its catalytic application towards HER	and Fuels	1457	
20. Manjunatha Nemakal, **Shambhulinga Aralekallu**, Imadadulla Mohammed, Lokesh Koodlur Sannegowd*	Synthesis and application of cobalt tetrabenzothiazolephthalocyanine for the amperometric sensing of 4-aminophenol at nanomolar concentration	Electrochimica Acta	2019, 318, 342-353 (20.09.2019)	7.336
21. Manjunatha Palanna, **Shambhulinga Aralekallu**, Keshavananda Prabhu C P, Veeresh A Sajjan, Mounesh and Lokesh Koodlur Sannegowda*	Nanomolar detection of Mercury(II) using electropolymerised film of phthalocyanine	Electrochimica Acta	2021, 367, 137519	7.336
22. K S Lokesh*, **Shambhulinga Aralekall**, N Manjunath, M Imadadulla, Mirabbos Hojamberdiev	Porphyrin Macrocycle-Stabilized Gold and Silver Nanoparticles and Their Application in Catalysis of Hydrogen Peroxide	Dyes and Pigments	2015, 120, 155-160	5.122
23. N Manjunath, **Shambhulinga Aralekallu**, M Imadadulla, Keshavanand Prabhu, K S Lokesh*	Chemisorbed palladium phthalocyanine for simultaneous determination of biomolecules	Microchemical Journal	2018, 143, 82-91	5.304
24. Zahid Bhat, Ravikumar T, Mruthyunjayachari C D, Shahid P S, **Shambhulinga Aralekallu**, Alagar Raja K, Manu G and Musthafa O T*	A Direct Alcohol Fuel Cell Driven by an Outer Sphere Positive Electrode	J. Phys. Chem. Lett	2017, 8, 3523-3529	8.70
25. Ravikumar T, Mruthyunjayachari C D, Alagar Raja K, **Shambhulinga Aralekallu**, Manu G, Shahid P S, Zahid Bhat and Musthafa O T*	2.6 V Aqueous Battery with a Freely Diffusing Electron Acceptor	J. Phys. Chem. C	2017, 121, 3707−3713	4.48
26. Ravikumar T, Alagar Raja K, Mruthyunjayachari C D,**Shambhulinga Aralekallu**, Shahid P Manu Gautam , Har Makri Nimbegondi Kotresh and Mustha O T*	Proton Exchange Membrane Fuel Cell with a Pt-free Cathode and Freely Diffusing Electron Acceptor	ChemElectroChem	2017, 4, 283-286	4.782

27. Pramod.G, Kavita.K, Manasa.N, Mruthyunjayachari.D, **Shambhulinga Aralekallu**, Alagar.K, Zahid.B, Ravikumar.T, Shahid.S, Musthafa.T*	A Redox Active Binary Logic Gate Circuit for Homeland Security	Anal. Chem	2017, 89, 7893-7899	8.008
28. Siddhi Kaire, Pramod Gai **Shambhulinga Aralekallu**, Zahid Bhat, Alagar.K, Mruthyunjayachari D, Ravikumar T, Shahid. S, Musthafa.T*	A Chemically Driven Self-Biased Command Control Switch	ChemElectroChem	2017, 4, 1-6	4.782
29. Pramod G, **Shambhulinga Aralekallu**, Zahid Bhat, Alagar Raja K, Mruthyunjayachari D, Manu Gautam, Musthafa.T*	A Redox Active Electrochemical Decoder	Adv. Mat. Technologies	2018, 1700337	8.856
30. Keshavanana Prabhu CP; Manjunatha Nemakal; **Shambhulinga Aralekallu**; Imadadulla Mohammed; Shivaprasad KH; Amshumali MK; Lokesh Sannegowda Koodlur Sannegowda	Synthesis and characterization of novel imine substituted phthalocyanine for sensing of L-cysteine	Journal of Electroanalytical Chemistry	2019, 834, 130-137	4.598
31. Veeresh A. Sajjan, Imadadulla Mohammed, Manjunatha Nemakal, **Shambhulinga Aralekallu**, Hemantha Kumar KR , Lokesh Koodlur Sannegowda*	Synthesis and electropolymerization of cobalt tetraamine benzamidephthalocyanine macrocycle for the amperometric sensing of dopamine	Journal of Electroanalytical Chemistry	2019, 838, 33-40	4.598
32. Manu Gautam, Mruthyunjayachari C D, Ravikumar T, Alagar Raja K, **Shambhulinga Aralekallu**, Shahid Pottachola Shafi, Pramod Gaikwad, Harish Makri Nimbegondi Kotresh, Musthafa O T *	Polarity Governed Selective Amplification of Through Plane Proton Shuttling in Proton Exchange Membrane Fuel Cell	Phys. Chem. Chem. Phys	2017, 19, 7751-7759	3.906
33. Ravikumar T, Manu Gautam, **Shambhulinga Aralekallu**, Mruthyunjayachari C D, Alagar Raja K, Zahid Bhat, Musthafa O T *	A Rechargeable Aqueous Sodium Ion Battery	ChemElectroChem	2019, 6(7), 2095-2099	4.782
34. Manjunatha Nemakal, **Shambhulinga Aralekallu**, Imadadulla Mohammed, Sreenivasa Swamy,	Novel cobalt(II) octabenzimidazolephthalocyanine: synthesis and its application for amperometric detection of	Journal electroanalytical chemistry	2019, 839, 239-246	4.598

Lokesh Koodlur Sannegowda*	environmental pollutant hydrazine			
35. Keshavananda Prabhu C P, Manjunatha Nemakal, **Shambhulinga Aralekallu**, Manjunatha P, Veeresh A Sajjan, Akshitha D, Lokesh Koodlur Sannegowda*	A comparative study of carboxylic acid and benzimidazole phthalocyanines and their surface modification for dopamine sensing	Journal electroanalytical chemistry	2019, 847, 113262	4.598
36. Manjunatha P, Imadadulla M, **Shambhulinga Aralekallu**, Manjunatha N, Lokesh Koodlur Sannegowda*	Simultaneous detection of paracetamol and 4-aminophenol at nanomolar level using biocompatible cysteine substituted phthalocyanine	New Journal of Chemistry	2020, 44, 1294–1306	3.925
37. Veeresh A. Sajjan, **Shambhulinga Aralekallu**, Manjunatha Nemakal, Manjunatha P, Keshavananda Prabhu C P, Lokesh Koodlur Sannegowda*	Nanomolar detection of lead using electrochemical methods based on a novel phthalocyanine	Inorganica Chimica Acta	2020, 506, 119564	3.118
38. Keshavananda Prabhu C P, **Shambhulinga Aralekallu** , Manjunatha P, Veeresh A Sajjan, Renuka B, Lokesh Koodlur Sannegowda	Electropolymerized benzimidazole phthalocyanine for amperometric sensing of Ammonia	Journal of Applied Electrochemistry	2022, 52, 325-338	2.925
39. Imadadulla M, Manjunatha Nemakal, **Shambhulinga Aralekallu**, Manjunatha P, Veeresh A. Sajjan, Keshavananda Prabhu C P, Lokesh Koodlur Sannegowda*	Phthalocyanine sheet polymer based amperometric sensor for the selective detection of 2,4-dichlorophenol	Journal electroanalytical chemistry	2020, 114292	4.598
40. Veeresh A. Sajjan, **Shambhulinga Aralekallu**, Manjunatha Nemakal, Manjunatha P, Keshavananda Prabhu C P, Lokesh Koodlur Sannegowda*	Schiff-base embedded cobalt phthalocyanine fabricated electrode for the nanomolar detection of nitrophenol	Journal electroanalytical chemistry	2021, 164, 105980	4.598

PATENTS

CHEMICALLY CHARGEABLE PHOTO BATTERY.

Publication Number: 201621010024, Publication Date: 17.11.2017. US Patent

Books

1. **Shambhulinga Aralekallu**, Lokesh Koodlur Sannegowda, Metal Nanoparticles for Electrochemical sensing applications, Handbook of Nanomaterials for Sensing

Applications, *Elsevier*, 2021, Pages 589-629.

2.

CONFERENCES AND SEMINARS

1. **Poster Presentation** in a regional conference held at Veerashaiva College, Ballari on 16th,17th January 2015
2. **Poster Presentation** in National seminar held in Mumbai on October 15th – 17th, 2015
3. **Poster Presentation** in a regional conference held at IISER, Pune on 12th and 13th March2016
4. **Oral Presentation** on *"Spectrometer Type pH Sensor using a Conducting Polymer Redox Probe"* on 9th August 2016 at International Conference at Mysuru.
5. **Oral Presentation** on *"A Novel pH Sensor- Alternative to Existing pH sensors"* on 14th – 15th February 2017 in Anveshan (Inter-university South Zone Students ResearchConvention) at Tumkur.
6. **Poster Presentation** at KSTA National Conference held at Ballari on 9th and 10th March 2017
7. **Poster Presentation** at KSTA National Conference held at Koppal on 23rd and 24th February 2018
8. **Participated** in NAAC sponsored National Conference held at Veerashaiva College on … Ballari.
9. **Oral** Presentation in Self-Sponsored National Conference held at Veerashaiva College on …. Ballari.

AWARDS AND PRIZES

1. 3rd rank in M.Sc Chemistry at the University
2. 1st prize winner in Poster Presentation at KSTA National conference held at Ballari on March 8th and 9th, 2017
3. Best Prize Winner in Poster Presentation at KSTA National Conference held at Koppal on 23rd and 24th February 2018
4. Second Prize Winner in Poster Presentation at KSTA National Conference held at Koppal on 24th and 25th Dec 2019

TRAINING AND CERTIFICATES

1. I completed five weeks of training on **Cement Manufacturing** fromNCBM Ballabhgarh.
2. Attended a national seminar on new dimensions and career opportunities in pharmacy on25th May 2010.
3. Attended a n international symposium on emerging trends in biomedical and nanobiotechnology: Relevance to human health on December 2009.
4. Attended the Seminar on National Year of Chemistry at Vijayanagar College, Hospet
5. Got various awards in sports, cricket, Football, and Badminton.

PERSONAL INFORMATION

- **Name** : Shambhulinga Aralekallu
- **DOB:** 13.05.1987
- **Address** : Shambhulinga A S/O Mallanagouda A
  Konchigeri Post, Siruguppa Tq,
  Bellary Dist- 583120
- **Sex:** Male
- **Nationality:** Indian

- **Languages:** Kannada**,** English, Hindi and Telugu.
- **E-mail:** shambubellary@gmail.com
- **Contact Nos** **:** +919164368550, +918551974838
- **Contact Address**: Dr. Shambhulinga Aralekallu,
  Chemistry Dept., VSK University, Ballari.

REFERENCES

1. **Prof. K. S. Lokesh**, *lokeshsk@gmail.com*
   Department of Chemistry, Vijayanagara Sri Krishnadevaraya University, (VSKUB), Ballari-583105, India.

2. **Dr. Muhammed Musthafa**, *musthafa@iiserpune.ac.in*
   Department of Chemistry, Indian Institute of Science Education and Research-Pune (IISER- Pune), Maharashtra, Pune – 411008, India.

3. **Dr. Farzin Arjmand**, *farzin.arjmand@gmail.com*
   Faculty at East China University of Science and Technology, China

4. **Prof. Jin Ho Bang**, jbang@hanyang.ac.kr
   Department of Chemical and Molecular Engineering
   Hanyang University
   Science and Technology Building I, Room 437
   55 Hanyangdaehak-ro, Sangnok-gu
   Ansan, Gyeonggi-do 15588
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5. **Prof. Young-Ho Ahn**, yhahn@ynu.ac.kr
   Professor in Environmental Science and Engineering
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