Biodata of Sumalekshmy Sarojini Amma, Ph. D

Date and Place of Birth: May 30, 1976, Pandalam, Kerala, India

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Academic Background:

Ph. D., Chemistry, 2004, University of Kerala, India

Thesis title: "Donor-acceptor substituted tetrahydropyrenes: Synthesis, photophysical studies and applications"
Thesis supervisor: Dr. K. R. Gopidas, Photosciences and Photonics Division, NIST, Trivandrum

M. Sc. Chemistry, 1999, Mahatma Gandhi University, Kerala (78%, IInd rank)

Thesis title: "Photoinduced Electron Transfer Reactions between Pyrylium salts and Electron Rich Donors: Steady-State Irradiation, Fluorescence Quenching and Laser Flash Photolysis Studies"

B. Sc. Chemistry, Physics and Mathematics, 1996, University of Kerala, India (90%)

Professional Experiences:

Associate Professor (2024 till date **)** at Department of Chemistry T. K. M. College of Arts and Science, Kollam

Assistant Professor (2012 to 2024) at Department of Chemistry T. K. M. College of Arts and Science, Kollam

Postdoctoral Research Fellow (May 2006 – January 2012) at School of Chemistry and Biochemistry, Georgia Institute of Technology, Atlanta, GA (Advisor: Professor Christoph J. Fahrni).

Postdoctoral Research Fellow (Jan 2005 – May 2006) at Lehrstuhl fűr Umweltmesstechnik, Universitat Karlsruhe (TH) 76128 Karlsruhe, Germany (Advisor: Prof. Andre Braun).

Senior Research Fellow (2001-2004) and **Junior Research Fellow** (1999-2001) of Council of Scientific and Industrial Research (CSIR-NET Fellowship) at the Photosciences and Photonics Division, National Institute for Interdisciplinary Science & Technology (CSIR), Trivandrum (Advisor: Dr. K. R. Gopidas).

M. Sc. Project Fellow (1998, 4 months) at the Photosciences and Photonics Division, National Institute for Interdisciplinary Science & Technology (CSIR), Trivandrum (Advisor: Dr. K. R. Gopidas).

Highlights:

- Qualified NET Lectureship-CSIR-UGC examination in 1998
- Qualified GATE
- Ability to work in a team and good leadership and communication skills.
- Well versed in using scientific search databases such as Sci-Finder, Beilstein, Reaxys and Pubmed.
- Well experienced in organic synthesis.
- Ability to handle analytical instruments such as FT NMR, IR, GC-MS Spectrometers, TLC and HPLC techniques and Photochemical Reactors. Hands on expertise with specialized instruments such as Confocal Microscope, Cyclic Voltammeter, UV-Visible Spectrophotometers, Spectrofluorimeter, CD spectrophotometer, Nanosecond Laser Flash Photolysis System and Single Photon Counting System (both ns and ps).
- Expertise in cell culture and cell imaging using traditional and two-photon confocal microscopes.
- Affiliated to American Chemical Society since 2008; Member of Chemical Research Society of India (CRSI) during 2001-2004.

Teaching/mentoring experience:

Research Guide from 2014

- Lekshmi C.L. - Researcher ID-15484 -2017- Biological and photophysical exploration of chemically modified xanthones derived from naturally occurring alpha mangostin –Ph. D. Awarded
- Sherifa Rahim - Researcher ID-15839 – 2018 - Synthesis and photophysical studies of boronate functionalised xanthones derived from naturally occurring alpha mangostin
- Swathy U.S. - Researcher ID-20766 -2019 -Small molecules based sensors for biologically relevant cations and anions – Submission in progress
- Mentored and trained graduate and under-graduate students in Fahrni group at Georgia Institute of Technology, Atlanta during 2006-2010.
- Co-guided two M. Sc project students during Ph. D at NIIST (CSIR), Trivandrum during 2002-2004.

Administrative experience:

Head of the department: June 2024 till date

ICC Chairperson: November 2024 till date

IQAC coordinator: 2018 to 2024

RUSA Coordinator: 2018 to 2020

NIRF Coordinator: 2018 to 2023

Faculty Advisor: 2012-2015 UG batch, 2015-2017 PG batch

Publications:

A. Journals and books

1. Hydrogen Bond-Assisted Excited State Switching and Fluoride Responsive Behavior of Orthogonal spiroborate Ester Derived from Naturally Occurring α-Mangostin, Swathy Unnikrishnapillai Saraswathy, Lekshmi Chandranpillai Lalithabai, Sandip Giri, Safa Ayoob, Simimole Haleema,* Anakuthil Anoop,* and **Sumalekshmy Sarojiniamma***, Eur. J. Org. Chem. 2025, e202401411, 1-7
2. Balancing Brightness and Photobasicity: Modulating Excited-State Proton Transfer Pathways in Push−Pull Fluorophores for Biological Two-Photon Imaging, Adam M. McCallum, Jiyao Yu, **S. Sumalekshmy**, Abigail Hagwood, and Christoph J. Fahrni, J. Phys. Chem. A. **2024**, 128, 9904−9916
3. Graphene Quantum Dots Derived from Honey and Mangostin as Sustainable Materials to Construct Fluorescence Turn-On Molecular Switches for Pesticide Detection, C. L. Lekshmi, U. S. Swathy, K. Vijayan, H. Simimole, **S. Sumalekshmy***, Chemistry Select, **2023**, 8, e202204869 1-5
4. Biogenic synthesis of silver nanoparticles using Sterculia foetida seed extract and evaluation of its therapeutic potential, S. Farsana, P.N. Ansil, S. **Sumalekshmy**, S. Soumya, Materials Today: Proceedings, ISSN 2214-7853, November **2023**
5. Review on Synthetic and Pharmacological Potential of Compounds Isolated from Garcinia mangostana Linn.Swathy Unnikrishna Pillai Saraswathy, Lekshmi Chandran Pillai Lalitha, Sherifa Rahim, Chithra Gopinath, Simimole Haleema*, **Sumalekshmy Sarojini Amma***, Hassan Y. Aboul-Enein*, Phytomedicine Plus, **2022**, 2, 100253
6. A highly sensitive GC-MS method for simultaneous determination of Anacardic Acids in Cashew (Anacardiumoccidentale) Nut Shell oil in presence of other phenolic lipid derivatives, Osmana, S. M.; Abdel-Megied, A. M.; Zain Eldain, M. H.; Simimole, H.; ChithraGopinath; **Sumalekshmy, S**.; Aboul-Enein, H. Y., Biomedical Chromatography, **2019**, 33, e4659
7. Chromis-1, a Ratiometric Fluorescent Probe Optimized for Two-Photon Microscopy Reveals Dynamic Changes in Labile Zn(II) in Differentiating Oligodendrocytes, Bourassa, D.; Elitt, C. M.; McCallum, A. M.; **Sumalekshmy, S**.; Mcrae, R. L.; Morgan, M. T.; Siegel, N.; Perry, J. W.; Rosenberg, P. A.; Fahrni, C. J. *ACS Sensors*, **2018**, *3,*458-467
8. Probing Ternary Complex Equilibria of Crown Ether Ligands by Time-Resolved Fluorescence Spectroscopy, Morgan, M. T.; **Sumalekshmy, S**.; Sarwar, M.; Beck, H.; Crooke, S.; Fahrni, C. J., *J. Phys. Chem. B*, **2014**, *118*, 14196-14202
9. Metal-ion-responsive fluorescent probes for two-photon excitation microscopy, **Sumalekshmy, S.** and Fahrni, C. J. *Chem. Mater.* **2011**, *23*, 483-500.

10. Up-scaling aerosol functionalization. Photooxychlorination using vacuum- ultraviolet radiation (VUV), Vicente, J. S., Gejo, J. L., Rothenbacher, S., **Sumalekshmy, S.**, Gogritchiani, E., Woerner, M., Oliveros, E. and Braun, A. M. *ARKIVOC*, **2011**, *6*, 210-226.
11. (Book) VUV-photochemical functionalization of polystyrene aerosols, Vicente, J. S., Gejo, J. L., Rothenbacher, S., **Sumalekshmy, S.**, Gogritchiani, E., Miranda, M. A., Woerner, M., Oliveros, E., Kasper, G. and Braun, A. M. In *Basics and Applications of Photopolymerization Reactions*, Vol. 3, **2010**, 47-65.
12. In Situ Imaging of Metals in Cells and Tissues, McRae, R., Bagchi, P., **Sumalekshmy, S.** and Fahrni, C. J. *Chem. Rev.* **2009**, *109*, 4780-4827.
13. Oxidation of polystyrene aerosols by VUV-photolysis and/or ozone, Vicente, J. S., Gejo, J. L., Rothenbacher, S., **Sumalekshmy, S.**, Gogritchiani, E., Woerner, M., Kasper, G. and Braun, A. M. *Photochem. Photobiol. Sci.* **2009**, *8*, 944-952.
14. Design of Emission Ratiometric Metal-Ion Sensors with Enhanced Two-Photon Cross Section and Brightness, **Sumalekshmy, S.**, Henary, M. M., Siegel, N. N., Lawson, P. V., Wu, Y., Schmidt, K., Bredas, J. -L.; Perry, J. W. and Fahrni, C. J. *J. Am. Chem. Soc.* **2007**, *129*, 11888-11889.
15. Excited-State Intramolecular Proton Transfer in 2-(2'-Arylsulfonamidophenyl) benzimidazole Derivatives: The Effect of Donor and Acceptor Substituents**,** Henary, M. M., Wu, Y., Cody, J., **Sumalekshmy, S.**, Li, J., Mandal, S. and Fahrni, C. J. *J. Org. Chem.* **2007**, *72*, 4784-4797.
16. Vacuum-ultraviolet photochemically initiated modification of polystyrene surfaces: morphological changes and mechanistic investigations, Gejo, J. L., Narayanapillai, M., **Sumalekshmy, S.**, Glieman, H., Schimmel, T., Woerner, M. and Braun, A. M. *Photochem. Photobiol. Sci.* **2006**, *5*, 948-954.
17. Reaction of aromatic amines with $Cu(ClO_4)_2$ in acetonitrile as a facile route to amine radical cation generation, **Sumalekshmy S.** and Gopidas, K. R. *Chem. Phys. Lett.* **2005**, *413*, 294-299.
18. Intramolecular charge transfer processes in donor-acceptor substituted vinyl tetrahydropyrenes, Sumalekshmy S. and Gopidas, K. R. *Photochem. Photobiol. Sci.*, 2005, *4*, 539-546.
19. Synthesis and photophysical studies of few donor-acceptor substituted tetrahydropyrenes, **Sumalekshmy S.** and Gopidas, K. R. *New J. Chem.* **2005**, *29*, 325-331.
20. Photoinduced intramolecular charge transfer in donor-acceptor substituted tetrahydropyrenes, **Sumalekshmy S.** and Gopidas, K. R. *J. Phys. Chem. B* **2004**, *108,* 3705-3712.

B. Papers presented at conferences

1. Dynamic imaging of zinc by two-photon and X-ray fluorescence microscopy,

   Fahrni, C. J., McRae, R., **Sumalekshmy, S.** (Paper presented by Prof. Christoph Fahrni); *60 th Fujihara Seminar-Zinc signaling and cellular functions, Osaka,* Japan ,Oct 28-31 **2010**.
2. Dual-mode ratiometric and turn on sensors for imaging kinetically labile zinc pools by nonlinear microscopy,

Sumalekshmy, S., McRae, R., Siegel, N. N., Perry, J. W. and Fahrni, C. J., Poster presented at *ACS National Meeting, Philadelphia, PA, United States,* **August 17-21, 2008** , ORGN-109.

3. Rational design of conjugated organic chromophores for two-photon absorption and bioimaging: One-photon and two-photon spectroscopy,

   Siegel, N. N., Zucchero, A. J., Wilson, J, N., Bunz, U. H. F., **Sumalekshmy, S.**, Wu, Y., Fahrni, C. J., Rumi, M. and Perry, J. W. , Poster presented at *ACS National Meeting, Boston, MA, United States,* **August 19-23, 2007**.

4. Towards functional polymer based materials: Ozonolysis of PS films,

   Sumalekshmy, S., Gejo, j. l., Martinez, C., Narayana Pillai, M. and Braun, A. M., Poster presented at *36th Nancy-Karlsruhe Meeting, Ventron, France,* June 9-11, 2005.

5. Novel metal ion sensors based on donor–acceptor substituted tetrahydropyrenes,

   Sumalekshmy, S. and Gopidas, K. R., Poster presented at *VIth National Symposium in Chemistry, Indian Institute of Technology, Kanpur, India,* **February 6-8, 2004**.

6. Donor-acceptor tetrahydropyrenes: Photophysical properties and applications,

   Sumalekshmy, S. and Gopidas, K. R., Poster presented at *IIIrd Trivandrum International Symposium on Recent Trends in Photochemical Sciences," Regional Research Laboratory, Trivandrum, India,* **January 5-7, 2004**.

7. Photoinduced intramolecular charge transfer in donor-acceptor tetrahydro-pyrenes,

   Sumalekshmy, S. and Gopidas, K. R., Poster presented at *Vth National Symposium in Chemistry, Central Leather Research Institute, Chennai, India,* **February 7-9, 2003**.

Research Student Presentations

1. Best Poster Presentation award in the Three-day National Seminar on "Functional Polymers for Material Applications" (polyMAT-2023) organized by Department of Polymer Chemistry, Government College Attingal, in collaboration with Directorate of Collegiate Education, Government of Kerala on 15-17 November 2023.
2. Best Oral Presentation award at International Conference on "Advanced Materials and Nanotechnology for Green and Sustainable Future" (ICAGS-2023), organized by Department of Chemistry, Maharaja's College, Ernakulam, sponsored by Government of Kerala on 5-6 December 2023.
3. Best Oral Presentation award at 36th Kerala Science Congress held during 8-11 February 2024 at Government College, Kasaragod.
4. C. L. Lekshmi, S. Sumalekshmy, Molecular Logic Gate Based on α-Mangostin-GQD System for the Sensing Applications, *National seminar on Neoteric Advances in Chemical Sciences, (NACS) 2018*, (Best Oral Presentation)
5. C. L. Lekshmi, S. Sumalekshmy, Fluorescene Sensor based on carbon dots derived from α- mangostin for the detection zinc ions, *International Seminar on Luminescence Materials, ISLM 2022* (Oral presentation)

6. C. L. Lekshmi, S. Sumalekshmy, Fluorescene Sensor based on carbon dots derived from α- mangostin for the detection zinc ions, *Kerala Science Congress 2022* (Oral presentation)
7. C. L. Lekshmi, S. Sumalekshmy, Fluorescene Turn on Sensor for Carbofuran based on Graphene Quantum Dots-Mangostin interactions, *Kerala Science Congress 2019* (Poster presentation

References:

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