Dr. Daly Davis

Associate Professor
Department of Polymer Sciences
Somaiya School of Basic and Applied Sciences
Somaiya Vidayavihar University
Vidyanagar (East), Maharashtra 400077
Phone:7096694428
e-mail: daly@somaiya.edu

Everest 11B
BARC Housing complex
Anusakthinagar
Trombay, Mumbai-400094
Phone:09757180148
e-mail: dalydavis@gmail.com

Academic Profile

2023 *Nov 17 -Present*	***Associate Professor in Chemistry*** Department of Polymer Science Somaiya School of Basic and Applied Sciences Somaiya Vidayavihar University Vidyanagar (East), Mumbai - 400077
2021 *January* **– *2023*** *Nov16*	***Assistant Professor*** Department of Polymer Science S K Somaiya College Somaiya Vidayavihar University Vidyanagar (East), Mumbai - 400077
2017 *May* **- 2020** *December*	***Senior Research Associate*** *(CSIR Scientist pool)* Technical Physics Division Bhabha Atomic Research Centre Trombay, Mumbai -400085
2019 *August – 2019 December*	***Visiting Faculty*** University of Mumbai – DAE Center for Excellence in Basic Science, Kalina Campus Mumbai
2015 *March* **- 2017** *March*	***Visiting Scientist*** Institute for Plasma Research Gandhinagar-382428 Gujarat
2014 *February* – **2015** *March*	***Visiting Faculty*** University of Mumbai – DAE Center for Excellence in Basic Science, Kalina Campus Mumbai
2012 *October* **– 2015** *March*	***Post-Doctoral Visiting Scientist***

Department of Nuclear and Atomic Physics
Tata Institute of Fundamental Research
Mumbai

2012 *March* **- 2012** *October* ***Visiting Fellow***
Department of Nuclear and Atomic Physics
Tata Institute of Fundamental Research
Mumbai

2008 *Dec***- 2011** *October* ***Postdoctoral Researcher***
Group of Prof. L. S. Cederbaum
Theoretische Chemie, Physikalisch-Chemisches Institut,
Universität Heidelberg,
Heidelberg, Germany.

2006 *Jan***- 2008** *Sep* ***Postdoctoral Researcher***
Schulich Faculty of Chemistry,
Israel Institute of Technology-Technion,
Haifa, Israel.

2001 *July* **– 2005** *Sep* ***Ph. D*** *[Physical Chemistry*]
Department of Applied Chemistry,
Cochin University of Science and Technology,
Cochin, Kerala, India.

Title of the thesis*:* ***Nonlinear optical properties of polymers containing azomesogens and chiral molecules: Theoretical and experimental evaluations***.

Thesis supervisor: Prof. K. Sreekumar

1998 - 2000 ***M. Sc****. [Applied Chemistry]*
Department of Applied Chemistry
Cochin University of Science and Technology
Cochin, Kerala, India.
First Class (75%)

Title of MSc Thesis ***One pot synthesis of benzamide and disubstituted diazetines Via Beckmann Rearrangement Using Activated Clay Catalyst .[done at Regional Research Lab [NIIST] Thiruvananthapuram]***

1995 - 1998 ***B.Sc.*** *[Chemistry [main], Physics [subsidiary], and Mathematics [subsidiary]]*
Calicut University,
Calicut, Kerala, India.
First Class (83%)

1994 -1992 ***Pre-Degree*** *[Physics, Chemistry, Biology and Mathematics]*
University of Calicut, Calicut, India.
First Class

1992 ***S.S.L.C. (Secondary School Leaving Certificate)***
Board of Public Examinations, Kerala State, India.
First class with distinction

➢ *Awards, Honors and Fellowships*

- ❖ Euro Planet International Travel Support for Research Collaboration at Atomki, Hungary and for Attending International Conference (DEA club meeting in Berlin, Germany)
- ❖ Dr. S K Somaiya award for Excellence in Research (2022-2023)
- ❖ DST woman Scientist
- ❖ CSIR pool scientist
- ❖ Invited talk in XVIII International Symposium on Electron Molecule Collisions and Swarms. (POSMOL-2013) Ishikawa, Japan
- ❖ Post-Doctoral Visiting Scientist (DAE) (2012-2015)
- ❖ DFG fellowship for Post-Doctoral Research, Germany. (2009-2011)
- ❖ Fellowship for Post-Doctoral Research (2006-2008) (*Israel Council for Higher Education-Israel*)
- ❖ Senior research fellowship for doctoral studies (2003-2006) (*DRDO*)
- ❖ *GATE-2000*

➢ *Research Interests*

- ❖ Electron Induced Chemistry [ongoing project]]
- ❖ Astro-chemistry [ongoing project]]
- ❖ Electron Induced reactions on biomolecules[ongoing project]
- ❖ Low Energy Electron molecule collision experiments in condensed phase[ongoing project]]
- ❖ Raman Spectroscopic studies on Rock Art Paintings [ongoing project]]
- ❖ Polymer Curing using Electron Beam[ongoing project]
- ❖ Matrix isolation IR spectroscopy[ongoing project]
- ❖ Computational chemistry [Calculations using Electronic Structure Theory - structure and property calculations of organic molecules, calculations on ultrafast electron transfer mechanisms in biological systems]
- ❖ Spectroscopic studies for tokamak and basic plasmas
- ❖ Electron-transfer and energy-transfer processes in donor - bridge-acceptor systems
- ❖ Design and evaluation of donor - acceptor (electron transfer) systems for nonlinear optics and for molecular logic gate applications

➢ *Project Grants*

- ***Principal Investigator***

1. *"Raman Spectroscopic Analysis of Rock Paintings of Saru Maru Caves, Bhopal"* Somaiya Vidyavihar University – Seed Fund. *Rs, 4,85,000/-*
2. *"Low energy electron induced chemical reactions in condensed phase*," Board of Research in Nuclear Sciences (BRNS). Rs. 34,67,350/

3. *"Electron induced Chemistry in condensed phase"* DST Women Scientist Scheme A (WOS-A) Rs 31,96,800/-

- ***Co -Principal Investigator***

4. "Reviving, Exploring, and Engaging Agricultural Past & Present through Stories (REEAPS)– Maharashtra and Karnataka sugarcane farmers." *Somaiya Vidyavihar University – Seed Fund* Rs. 1,00,000

➢ *Research Collaborations*

- ❖ Bhabha Atomic Research Centre, Mumbai – Electron Induced Chemistry
- ❖ Tata Institute of Fundamental Research – Low energy electron collision experiments
- ❖ Atomki, Hungary
- ❖ Archeological Survey of India- Bhopal

➢ *Ph D Guide*

Recognized as Ph D guide in Chemistry under Faculty of Science, Somaiya Vidyavihar University since March 2021

➢ *Teaching Experience*

- ❖ Introduction to Spectroscopy 2024 Jan – to date Integrated BS-MS -, SciSER, Somiya Vidyavihar University
- ❖ Spectroscopy, Rheology, Morphology and gelation -MSc Course -Polymer Science, 2021-To date, Department of Polymer Science, Somaiya Vidyavihar University
- ❖ Spectroscopy - 2021- To date , Department of Life Sciences, Nutraceuticals and Food Science, Somaiya Vidyavihar University
- ❖ Intermediate Chemistry for life Scientist (BSc Biotechnology. 2023-November – 2024 June [1 semester]
- ❖ 2021 -2022 - MSc Course - Environmental Studies
- ❖ Electronic Structure Theory – **Ph D Course** (Physics)– 2 Semesters -TIFR, Mumbai
- ❖ Computational Chemistry - **Ph D Course** (Physics) – 2 Semesters -TIFR, Mumbai
- ❖ Spectral Analysis – **Integrated M Sc Course** (Chemistry) – 1&1/2 Semester UM-DAE-CBS, Mumbai
- ❖ Advanced Physical Chemistry Laboratory – **Integrated M Sc Course** (Chemistry) 2 Semesters UM-DAE- CBS, Mumbai

➢ *M. Sc., M. Phil. and Ph. D. Thesis Supervised/Involved*

- ❖ Sonali Jagarnath Gupta " Studies of effect of chlorine content in anticorrosion properties of epoxy resin and developing an epoxy resin with low chlorine content" Department of

polymer Science, SKSC, 2025

- Pooja Tendoolkar "Evaluation of renewable materials in alkyd and acrylic resin for solvent-borne coating systems" Department of polymer Science, SKSC, 2024
- Kavita Yadhav "*Synthesis and Polymerization of Mannose acrylamide useful for Biological Applications*" Department of polymer Science, SKSC, 2023
- *"Low energy electron induced polymerization of Acrolein"*, Jeny Mistra MSc Thesis, Department of Polymer Science, SKSC, 2021
- *"Low energy electron induced polymerization of Allene"*, Gulista Saifi, Mistra MSc Thesis, Department of Polymer Science, SKSC, 2021
- *"Electron Induced Reactions in Condensed Molecules"*, Sramana Kundu, Ph D thesis, TIFR, 2017)
- *"FTIR spectroscopy of Organic molecules in the condensed Phase"*, M. Sc thesis, TIFR, 2013)
- *"Geometry Optimization and Energy Minimization of Beckmann Rearrangement intermediates"*, Juli Thomas, M. Sc. Thesis, 2004
- *"Synthesis and characterization of Polyester amides"*, Liji Jose, M. Phil. Thesis, 2004

➢ *Curriculum Developed.*

- The Mahua Tree: Chemistry, Culture, and Coexistence - field-based programs for undergraduate environmental education (For Somaiya Vidyavihar University) -2025
- Introductory Spectroscopy f- BS- MS Course (II Sem) (SciSER,SVU)-2024
- Advanced Spectroscopy for Polymer Scientist – **MSc Course** (II Sem) (Polymer Science, SKSC, SVU) -2023
- Computational Quantum Chemistry MSc Course & PhD Course work (SVU 2023)
- Polymer Rheology - **MSc Course** (I and II Sem) (Polymer Science SKSC, SVU) - 2021
- Polymers for Pharmaceutical Healthcare and Medicine – **MSc Course** (III Sem) (Polymer Science SKSC, SVU) -2022
- Polymer curing – **MSc Course** (III Sem (Polymer Science SKSC, SVU) - 2022
- Forest Chemistry – **Post Graduate Certificate** - Bhopal Campus, SUV -2022
- Advanced Physical Chemistry Laboratory – (VII semester) **Integrated MSc Course** (Chemistry) UM-DAE- CBES, Mumbai -2014

➢ *Laboratory Developed – Electron Induced Chemistry Laboratory*

With the help of space provided by the college and the BRNS grant I have developed a new laboratory to study electron induced chemistry. The laboratory includes a computer workstation and a spin coating unit. A vacuum chamber experimental apparatus for low electron irradiation experiments is developed and fabricated with the help of TIFR collaboration. Ph D and M Sc students are using the facilities for their research on electron induced chemistry on organic and biological molecules as well as polymers.

➢ *Research Students*

- Ms. Sonali Kamble, RTA from SVU, Registered for PhD (Polymer Science) in SKSC, SVU
- Ms. Rutisha Kotian, JRF under BRNS project, Registered for Ph D (Chemistry) in SIRAC, SVU
- Ms. Naheed Sheikh, RTA from SUV, Chemistry Student from SIRAC, SVU

➢ *Technical and Computer Skills*

- Electron collision experiments
- Ultra-High Vacuum (UHV)Techniques
- Spectroscopic Instrumentation –Especially Development of Mass and Raman spectrometers
- *Ab initio* quantum chemical calculations
- Laser produced plasma experiments.
- Laser Spectroscopy and LIF measurement
- Synthesis and characterization of organic molecules and polymers
- UV-Visible, FTIR, NMR, Mass, Fluorescence, Spectroscopic techniques
- TG-DTA and polarimetry

➢ *Events Organized*

- **Somaiya Public Lecture** by Prof. Nigel Masson, University of Kent UK, 25 November, 2024
- **Somaiya Public Lecture** by Prof. P Balaram. 13th October 2024
- **Convener** – National Conference – Somaiya Polymer Science Symposium Series (S4P-4) Polymer Science: Shaping Tomorrow's Innovations **– 13- 15 October, 2024**
- **Science Slam** – 2024 – Organized as a part of Science Day celebrations on Feb 28 , 2024
- **National Seminar & Discussion Meeting on Simulations in Polymers, Materials, and Biomolecules** Academia and Industry Perspectives, 22nd - 24th June 2023, Local Organizing Committee.
- **Plasma Exhibition** for students and public in collaboration with Institute for Plasma Research 20th -25th Feb 2023 – Coordinator
- **Chemical Research Society of India (CRSI), Lecture Series 2022**, August 23rd, 2022, Local Organizing Committee.
- **National Symposium on Polymer Science and Technology**, Academia and Industry Perspectives, 6th and 7th May, 2022 - Local Organizing Committee.
- **Recent Trends in Computational Chemistry – 2021**, August 11th and 12th, 2021 – Co - Convener
- Regular Invited Talks in the Department of Polymer Science, SUV
- Polymer Open day at Department of Polymer Science
- Events organized for students and faculties of SKSC as a part of Research Committee Member

➢ *Invited Talks*

1. TIFR – Brainstorming during Visit of Prof. Moorty Gundipati, JPL NASA, USa March 13, 14 , 2025 TIFR MUmbai
2. "Low Energy Electron-Induced Chemistry: Insights into Astrochemistry" 4th DEA Club meeting, Potsdam, Germany 19-21 June, 2024
3. '***CO_2 Chemistry in Space'***, 1st Symposium on genesis and evolution of organics in space, IIST, Thiruvanthapuram, January 18-20, 2024.
4. '**Low Energy Electron (LEE) Induced Astrochemistry'**, 1st Vikram Discussions on Astrobiology and Astrochemsirty, PRL, Ahmedabad, January 5,6, 2024
5. **'Biodegradability'** Summer course on Sustainability and Green Chemistry, Department of Polymer Science, SKSC & Green ChemisTree Foundation, July 2023
6. **"Introduction to Astrochemistry"** Department of Chemistry University of Calicut 7th June 2023
7. "Omnipresent Low Energy Electrons (LEEs)" Invited talk**, Somaiya Monthly Research Innovations & Technological Interactions (SMRITI#2), 21st** March 2023
8. "**Low Energy Electron Induced Chemistry: Interstellar Medium to Biological Cells**" International Conference on Current Trends in Chemistry CTriC2022 Kochi, March 2022
9. "**Omnipresent Low Energy Free Electrons: Stories from Interstellar medium to Biological cells"**.Hume centre for ecology and wild life biology 14th August 2021
10. **"Electron molecule collisions in condensed phase"** – *Advances in Atomic and Molecular Physics-India Perspective*, Goa, 26th and 27th October 2017
11. **"Decomposition of formic acid by free electron catalysis"** -*Topical Conference on Charged Particle Collisions and Electronic processes in Atoms, Molecules and Materials Q-PaCE* **2016**, Indian School of Mines, Dhanbad 9-11, January 2016
12. **"Catalytic Electron – A Fundamental Mechanism and its Experimental Verification"**, International Workshop on Dissociative Electron Attachment -DEA club meeting, Tata Institute of Fundamental Research, Mumbai, 18-20, November 2015
13. **"Electron Induced Mutiple bond breaking reactions"** ***T****he Indian Society for Radiation And Photochemical Sciences (ISRAPS) discussion meeting on "Molecular Spectroscopy and dynamics***,** TIFR, Mumbai, 8th November 2013
14. **"Negative ion resonance induced multiple bond breaking reactions¨ XVIII** *International Symposium on Electron Molecule Collisions and Swarms.(POSMOL-2013*) Ishikawa, Japan July 2013
15. **"Electron Induced Chemistry" NIT**-K, Surthkal May 2013
16. **"LEE Catalyzed one step multibond breaking reactions"** TIFR, *Mumbai*, February 2012
17. **"LEE Catalyzed one step multibond breaking reactions ¨** *C-MET, Thrissur January 2012*
18. **"Designing of effective Nonlinear Optical Polymeric Materials and Property Evaluation¨** Max Planck Institute for Polymer Research, Mainz, Germany, March 2008

List of Publications [Citations 370, h index 12 i index 14)

https://www.researchgate.net/profile/Daly-Davis
https://scholar.google.com/citations?hl=en&user=uobmA18AAAAJ

1. **Daly Davis** *Electrons as Architects :Redefining Polymer Chemistry Through Bond Breaking and Bond Making,* Polymer Communique, issue 12.1(Oct-Nov) 2025

2. **Daly Davis** *Electrons as Architects :Redefining Polymer Chemistry Through Bond Breaking and Bond Making,* Polymer Communique, issue 12.1(Oct-Nov) 2025

3. **Daly Davis** and Y. Sajeev *A perspective on CO_2 chemistry in space* **ISRAPS Bulletin** (2023) Vol. 35, Issue Number 1&2

4. Y. Sajeev, **Daly Davis**, Sramana Kundu, Vaibhav S Prabhudesai, E. Krishnakumar, *"Origin of Resonant Character in the Electron Impact Two-Body Neutral-Fragmentation of Methane"* **ChemPhysChem** (2022) 23 (14) **ChemPhysChem**. ISSN no 1359-7345 https://doi.org/10.1002/cphc.202200108 [*Impact factor 3.52]* 14394235

5. **Daly Davis** and Y. Sajeev "*A hitherto unknown stability of DNA basepairs"* **Chemical Communications** (2020) ***56 (93)**, 14625-14628 [Impact factor 6.2, Citations -6][* https://doi.org/10.1039/D0CC06641A] ISSN 1359-7345 (Print)

6. **Daly Davis,** K.G Bhushan, Y. Sajeev and L. Cederbaum *"A concerted synchronous [2+2] cycloreversion repair catalyzed by two electrons*" **Journal of Physical Chemistry Letters** (2018) **9 (24)** 6973-6977 *[Impact factor 6.9, Citations - 10]* **[**https://doi.org/10.1021/acs.jpclett.8b03256] ISSN: 1948-7185

7. **Daly Davis,** Sramana Kundu, Vaibhav S Prabhudesai, E. Krishnakumar "*Formation of CO_2 from formic acid through catalytic electron channel*" **Journal of Chemical Physics**, (2018) **146(8)** 081101**[***Impact factor – 4.4, Citations - 26]* **0021-9606 (print) 1089-7690 (web) DOI -**https://doi.org/10.1063/1.5032172 ISSN (E-ISSN) is 1089-7690

8. **Daly Davis** and Y. Sajeev "*Inducing chemical reactivity on specific sites of a molecules using the coulomb interaction exerted by a low energy electron"* **Physical Chemistry Chemical Physics** (2018) 20,6040-6044 [*Impact factor -3.57, Citations - 3*] ISSN number 1463-9076 DOI -https://doi.org/10.1039/C7CP08496J

9. **Daly Davis** and Y. Sajeev **"**Low energy free electron driven molecular engineering: Insitu preparation of Intrinsically shot-lived carbon-carbon covalent dimer of CO" **The Journal**

of Chemical Physics (Communications) (2017) **146**, 081101-1-0811015 **[***Impact factor – 4.4, Citations -10] ISSN* - **1359-7345** (print) 1364-548X (web) • DOI: 10.1063/1.4976969

10. **Daly Davis** and Y. Sajeev "*Low Energy Electron Catalysis: Electronic Origin of Catalytic Stategies* " **Physical Chemistry Chemical Physics (Communications)** (2016) **18**, 27715-27720 *[Impact factor – 3.57, Citations - 8] https://doi.org/10.1039/C6CP05480C* ISSN 1463-9084 (online) , ISSN number 1463-9076 (print)

11. Sramana Kundu, **Daly Davis**, Vaibhav. S. Prabhudesai and E. Krishnakumar "*Low Energy Electron Induced Reactions in Condensed Methanol"* **Journal of Physics: Conference Series** (2015) **635**, 062002 *(Impact fact -0.21, citations -1)* ***DOI*** *10.1088/1742-6596/635/6/062002 , ISSN - 1742-6596*

12. Vaibhav Prabhudesai, Vishvesh Tadsare, Sanat Ghosh, Krishnedu Gope **Daly Davis** and E. Krishnakumar, "*Dissociative Electron Attachment Studies on Acetone"* **Journal of Chemical Physics** (2014) **141**, 164320-1-7 [*Impact factor 4.4, Citations - 14] DOI: 10.1063/1.4898144 Online ISSN 1089-7690*

13. **Daly Davis** and Y. Sajeev "*Low energy-electron induced Permanently reactive CO_2 molecules"* ***Physical Chemistry Chemical Physics (Communications)*** *(2014)* ***16,*** *17408-17411 [Impact factor –3.57, Citations - 18] DOI –*https://doi.org/10.1039/C4CP02701A - ISSN 1463-9084 (online) , ISSN number 1463-9076 (print)

14. **Daly Davis**, Vaibhav Prabhudesai, Sramana Kundu and E. Krishnakumar "*O^- from Amorphous and Crystalline CO_2"* ***Physical Chemistry Chemical Physics*** *– (2014)* ***16,*** 8582- *8588 [Impact factor – 3.7, Citations- 3]* **DOI** https://doi.org/10.1039/C3CP55421J ISSN 1463-9084 (online) , ISSN number 1463-9076 (print)

15. B. Sivaramana,B. G. Nair, S. Kundu, Lo, **Daly Davis**, V. Prabhudesai, B. N. Raja Sekhare, N. J. Mason B. M. Cheng and E. Krishnakumar "*Vacuum Ultraviolet and Infrared Spectra of Condensed Methyl Acetate on Cold Astrochemical Dust Analogs"* **The *Astrophysical Journal*** (2013) 778 157(1-5) *[Impact factor – 5.5, Citations -16]* **DOI** 10.1088/0004-637X/778/2/157 ISSN: 1538-4357

16. **Daly Davis**, V. Vysotskiy, Y. Sajeev, and L. Cederbaum "*A one-step four-bond-breaking reaction catalyzed by an electron"* ***Angew. Chem. Int. Ed****.(2012)* ***51*** *(32):8003-8007 [Impact factor – 16.6, Citations - 50] DOI –* https://doi.org/10.1002/anie.201204162 ISSN: 1433-785

17. **Daly Davis**, V. Vysotskiy, Y. Sajeev, and L. Cederbaum **"***Electron impact catalytic*

dissociation: two-bond breaking by a low energy catalytic electron" ***Angewandte Chemie Int. Ed****. (2011)* ***50****, 4119-4122 [Impact factor – 16.6, Citations - 63] DOI -* https://doi.org/10.1002/anie.201005129 ISSN: 1433-785

18. **Daly Davis**, M. Caspery, S. Speiser and U. Peskin **"***On the effect of nuclear bridge modes on donor–acceptor electronic coupling in donor–bridge–acceptor molecules"* ***Chemical Physics*** *(2009)* ***358****, 45–51 [Impact factor – 2.6, Citations -9] DOI - https://doi.org/10.1016/j.chemphys.2008.12.016 ISSN - 0301-0104 (print) 1873-4421 (web)*

19. O. Kuznetz, **Daly Davis**, H. Salman, Y. Eichen, S. Speiser. **"***Intramolecular electronic energy transfer in rhodamine–azulene bichromophoric molecule"* ***J. Photochemistry and Photobiology A: Chemistry*** *(2007) 191, 176–181[Impact factor – 4.3, Citations - 10] DOI - https://doi.org/10.1016/j.jphotochem.2007.04.020 ISSN 0047-2670*

20. **Daly Davis**, K. Sreekumar, and S. K. Pati "*Designing effective nonlinear optical (NLO) materials with chiral substituents"* ***Synthetic Metal*** *(2005)* ***155****, 384–388 [Impact factor – 4.1, Citations - 17] DOI - https://doi.org/10.1016/j.synthmet.2005.09.019 ISSN 0379-6779*

21. Datta, S. K. Pati, **Daly Davis**, and K. Sreekumar, **"***Odd-Even Oscillations in First Hyperpolarizability of Dipolar Chromophores: Role of Conformations of Spacers"* ***Journal of Physical. Chemistry A*** *(2005)* ***109****, 4112-4117 [Impact factor – 2.9, Citations - 21] DOI - https://doi.org/10.1021/jp045449j ISSN -1089-5639 (print), 1520-5215 (web)*

22. **Daly Davis**, K, Sreekumar, Y. Sajeev, and S. Pal, **"***Optimization of Nonlinear Optical Properties by Substituent Position, Geometry and Symmetry of the Molecule: An ab Initio Study"* ***Journal of Physical Chemistry B*** *(2005)* ***109****, 14093-14101 [Impact factor – 3.5, Citations - 24] DOI -https://doi.org/10.1021/jp051355d ISSN* ***1520-5207*** *(Online)*

23. **Daly Davis**, B. Philip and K. Sreekumar, *"Chiral Polymers for Second Order Nonlinear Optics. An invited paper in the Proceedings of the International Conference on Polymers for Advanced Technologies, Macro 2004,* at Thiruvananthapuram, India.

➢ *International Conference/symposia presentations*

1. **Daly Davis**, Rutisha Kotian and K G Bhushan *'2,5-Norbornadiene and its reaction products in ISM conditions'*, Poster Presented, 1st Symposium on genesis and evolution of organics in space, IIST,Thiruvanthapuram, January 18-20, 2024.
2. **Daly Davis**, Rutisha Kotian and K G Bhushan, *Electron Induced biradical formation in 2, 5 Norbornadiene reaction path*, TSRP-2024, BARC, Mumbai
3. Sonali Kamble and **Daly Davis** Formulation and Modeling of Polyol based crosslinking systems, SPSI-MACRO-2023 International Conference on Polymer Science and Technology, December 2023, Guwahati.
4. Pooja Tendulkar, Sonali Kamble and **Daly Davis** "*Evaluation and Optimization of Mechanical properties of bio-polyol based Polyurethane Films*", SPSI-MACRO-2023 International Conference on Polymer Science and Technology, December 2023, Guwahati
5. **Daly Davis "***Low Energy Electron Induced Chemistry: Interstellar Medium to Biological Cells*" International Conference on Current Trends in Chemistry CTriC2022 Kochi, March 2022
6. **Daly Davis** and K.G Bhushan "*Thickness Measurements of Vacuum deposited Organic Films***",** Poster presented in DAE-BRNS International Symposium on Vacuum Science & Technology and its Applications in Accelerators (VSTAA-2022) Hybrid mode, Mumbai, 16-16 Feb 2022
7. **Daly Davis** and K.G Bhushan, "*Electron Induced Chemistry of 2, 5 Norbornadiene***",** Poster Presented in XXII International Symposium on Electron-Molecule Collisions and Swarms -POSMOL-2021**,** Virtual Meeting, August 2021
8. **Daly Davis,** Sramana Kundu, Vaibhav S. Prabhudesai, E. Krishnakumar,"*Decomposition of formic acid by free electron catalysis"* -(Invited talk on Topical Conference on Charged Particle Collisions and Electronic processes in Atoms, Molecules and Materials Q-PaCE 2016, Indian School of Mines, Dhanbad January 2016 (international seminar)
9. **Daly Davis,** Sramana Kundu, Vaibhav S. Prabhudesai, E. Krishnakumar **"***Catalytic Electron – A Fundamental Mechanism and its Experimental Verification***"** (Invited talk on International Workshop on Dissociative Electron Attachment -DEA club meeting, Tata Institute of Fundamental Research, Mumbai, November 2015 (international seminar)
10. **Daly Davis** *"Negative ion resonance induced multiple bond breaking reactions"* **(**Invited talk at the XVIII International Symposium on Electron Molecule Collisions and Swarms. (POSMOL-2013) *Ishikawa, Japan July 2013)*
11. **Daly Davis**, Vaibhav S. Prabhudesai and E. Krishnakumar "*Low energy Electron Induced Chemistry on Surfaces"* (Poster Presented in XVIII International Symposium on Electron Molecule Collisions and Swarms(POSMOL-2013) *Ishikawa, Japan July 2013)*
12. **Daly Davis**, Shammai Speiser and K. Sreekumar "*Chiral polyesters containing azomesogens for nonlinear optics:Role of Stereochemistry of Chiral molecules***"** (Poster presented in Israel Chemical Society Annual Meeting *Tel-Aviv, Israel, 2006.)*
13. **Daly Davis**, K. A. Maniram and K. Sreekumar "*Evaluation of NLO activity of donor – acceptor polyesters containing camphanediol as the chrial building unit*" (Poster presented

in Macro2004, the International Conference on Polymers for Advanced Technologies, *Thiruvananthapuram, India.)*

14. **Daly Davis**, K. Sreekumar, and S. K. Pati *"Designing effective nonlinear optical (NLO) materials with chiral substituents"* (Poster presented in Optical Probes, 2005 6th International Topical Conference on Optical Probes of Conjugated Polymers & Biosystems, *Indian Institute of Science and JNCASR, Bangalore, India.)*

➢ *National Conference/symposia*

15. Rutisha Kotian ,K G Bhushan and Daly Davis Free Electron Mediated Conversion of Toluene into Acetylene. *18th DAE-BRNS Biennial* Trombay Symposium on Radiation and Photochemistry TSRP-2026 , January 06–10, 2026 BARC, Mumbai (***Best Poster Award)***
16. Rutisha Kotian , K C Rao ,K G Bhushan and Daly Davis Irradiation Chemistry of Methyl Acetate in Interstellar Medium Conditions *18th DAE-BRNS Biennial* Trombay Symposium on Radiation and Photochemistry TSRP-2026 , January 06–10, 2026 BARC, Mumbai
17. Rutisha Kotian, and K G Bhushan, **Daly Davis**, Electron-Induced Chemical Reactions for Controlled Morphology of Reaction Products, ASI Symposium 004 on Genesis and Evolution of Organics in Space16-18 July 2025, GITAM, Bangalore
18. **Daly Davis,** Electron Irradiation and Morphological Control in Astrochemical Reaction Pathways Conference talk , ASI Symposium 004 on Genesis and Evolution of Organics in Space 16-18 July, 2025, GITAM, Bangalore**.**
19. Rutisha Kotian and **Daly Davis**, Low-Energy Free Electrons as Eco-Friendly Agents for Chemical Activation and Reactivity Engineering, 100 Years of Chemistry 2024, Celebration of Achievements of Indian Chemical Industries, January 28-29, 2025, Nehru Centre, Mumbai.
20. Sheikh Naheed, **Daly Davis "**Exploring Rock Art: Insights into Paint Composition and Weathering Effects through Raman Spectroscopy" 100 Years of Chemistry 2024, Celebration of Achievements of Indian Chemical Industries, January 28-29, 2025, Nehru Centre, Mumbai
21. Sheikh Naheed, **Daly Davis**, "*Deciphering Ancient Pigment Production and their Phase Changes in Rock Art through Raman Spectroscopy*", 24th National Conference on Atomic and Molecular Physics (NCAMP-25), 8-11 January 2025, IIT(ISM). Dhanbad.
22. Sonali Kamble**, Daly Davis**, "*Electron-induced Crosslinking of Polymeric Systems"*, 24th National Conference on Atomic and Molecular Physics (NCAMP-25), 8-11 January 2025, IIT(ISM). Dhanbad.
23. Rutisha Kotian and **Daly Davis**, Electron-induced covalent association of N-heterocycles in the interstellar medium., National Conference on Atomic and Molecular Physics (NCAMP-25), 8-11 January 2025, IIT(ISM), Dhanbad

24. Rutisha Kotian **Daly Davis**, "*Electron-induced covalent association of pyridine in the interstellar medium",* Somaiya Polymer Science Symposium Series (S4P-4) Polymer Science: Shaping Tomorrow's Innovations – Mumbai, 13- 15 October 2024
25. Sheikh Naheed, **Daly Davis**, "The Chemistry of Rock Art: Through Raman Frequency Simulations of Biopolymeric Organic Binders: Somaiya Polymer Science Symposium Series (S4P-4) Polymer Science: Shaping Tomorrow's Innovations – Mumbai, 13- 15 October 2024
26. Sonali Kamble, **Daly Davis**, *Electron-Induced Crosslinking of Polymeric Systems* Somaiya Polymer Science Symposium Series (S4P-4) Polymer Science: Shaping Tomorrow's Innovations – Mumbai, 13- 15 October 2024
27. Talk on Astrochemistry – "*Organics in Space*" Annual research Meeting, SVU, Jan30,31 2023
28. Talk on BRNS funded project Low Energy Electron Induced Chemical Reactions in Condensed Phase, Annual research Meeting, SVU, Jan30-31 2024.
29. Sonali Kamble and **Daly Davis** "*Designing of effective polymer formulation for electron beam curing using ab initio methods"* National seminar & Discussion meeting on simulations in polymers, Materials and biomolecules, Mumbai 22nd -24th June 2023
30. Ananya Rajamanoor and **Daly Davis** "*Amelioration of polypropylene hernia mesh material***"** Poster and oral presentation presented in National symposium on Polymer Science and Technology Mumbai, May 6 & 7, 2022
31. Karan Vilas Salvi and **Daly Davis "***Graphene oxide coated peo-pbt/peg-dbe membrane for high carbon dioxide separation from flue gas"* Poster presentation presented in National symposium on Polymer Science and Technology Mumbai, May 6 & 7, 2022 [Best Poster Award]
32. **Daly Davis** & Anant Kulkarni, Organized a national seminar of '*Recent Trends in Computational Chemistry'* S. K. Somaiya college, Somaiya Vidyavihar University, Mumbai August 11, 12, 2021
33. **Daly Davis**, **"***Electron molecule collisions in condensed phase***",** Oral presentation, Advances *in Atomic and Molecular Physics-India Perspective*, Goa, October 2017
34. **Daly Davis**, Jinto Thomas Vishal Pillai and Ajai Kumar *"Ion dynamics of soft stagnation produced by latterly colliding laser produced Plasma",* Oral presentation, 21st NCAMP (ISAMP), Ahmedabad , January 2017
35. **Daly Davis** and Sajeev Y" *Electronic Origin of Catalytic Strategies*", poster, Theoretical Chemistry Symposium Hyderabad, December 2016
36. **Daly Davis** and Sajeev Y. *"Low energy electron (LEE) as a catalyst for chemical reactions"* Poster, Frontiers in Electronic Structure theory, Goa May, 2015
37. Sramana Kundu, **Daly Davis**, Vaibhav S. Prabhudesai and E. Krishnakumar *Low energy electron induced reactions in condensed methanol, poster* (*Best Poster Award),* National Conference on Atomic and Molecular Physics (NCAMP-XX)Thiruvanthapuram*, December, 2014*
38. Discussion meeting on Atomic and Molecular data for Applications – IUAC New Delhi, April, 2014

39. **Daly Davis** *"Electron induced Multiple Bond Breaking Reactions"* talk, ISRAPS, "Molecular Spectroscopy and Dynamics" ISRAPS, TIFR, Mumbai December, 2013
40. Meeting on Virtual Atomic and Molecular Data Centre – Ahmadabad, November, 2013
41. **Daly Davis**, Vaibhav S. Prabhudesai and E. Krishnakumar *"Carbon dioxide formation from condensed formic acid through negative ion resonance",* poster, Spectroscopy and Dynamics of Molecules and Clusters *Udaipur, February, 2013*
42. **Daly Davis**, Vaibhav S. Prabhudesai and E. *Krishnakumar "Low energy electron induced chemistry on surfaces",* poster, DAE-BRNS Sympsoium on Atomic and Molecular Physics IISER*, Kolkata December, 2012*
43. B. Sivaraman, **Daly Davis**, Sramana Kundu, Vaibhav S. Prabhudesai, M. A. Rahman, E. Krishnakumar *"Experimental set up for low energy electron collision on molecules in the condensed phase",* poster, DAE-BRNS Sympsoium on Atomic and Molecular Physics IISER, *Kolkata December, 2012*
44. B. Sivaraman, **Daly Davis**, Sramana Kundu, Vaibhav S Prabhudesai and E. Krishnakumar *"Infrared spectra of nitrile ices and their implications to Titan surface chemistry",* poster, DAE-BRNS Sympsoium on Atomic and Molecular Physics IISER, Kolkata December, 2012
45. B Sivaraman, S. Kundu, V. S. Prabhudesai, M. A. Rahman, D. Daly, E Krishnakumar,"Low energy electron collisons on molecules in the condensed phase", poster, Workshop on Highly Charged Ions, TIFR, Mumbai, 2012
46. **Daly Davis**, K. Sreekumar, Y. Sajeev, and S. Pal *"Nonlinear optical properties of para-Nitroaniline and its methyl substituted derivatives",* Poster, Theoretical Chemistry Symposium-2004, *BARC Mumbai, India.)*

➢ *Panel Discussion*

- ❖ 1st Symposium on genesis and evolution of organics in space, IIST, Thiruvanthapuram, January 18-20, 2024

➢ *Peer Reviewer*

- ❖ The Journal of Physical Chemistry
- ❖ Physics of Fluids

➢ *Administrative Responsibilities*

- ❖ Co-Ordinator - Centre of Excellence in Computational Science and Simulations (C2S2) (11Nov 2025 – Present)
- ❖ Convenor – Innovation Incubation and Entrepreneurship Committee of SSBAS -25-26
- ❖ Convenor – Social and Industry Connect UGC Connect 25-26
- ❖ Committee member - International Collaborations, Industry Connect and Students exchange - 25-26
- ❖ Committee Member – UGC Care - 25-26

- Institute Expert – Research Management, EPR
- BOS member – MSc, Polymer Science
- Co-Ordinator – Pre Ph-D course work Chemistry (2023-24)
- Co-Ordinating for Prof. Gadre's Computational Quantum Chemistry Course for MSc & Ph D students (AY-23-24)
- Committee member Research committee, FIP, exam squad (22-23, 23-24)
- Expert Committee Member for Integrated BSMS
- Invitee – BoS, MSc Polymer Science

➢ *Faculty Improvement Programs*

1. Completed with A grade four week FDP on **Faculty in Universities/Colleges/Institutes of Higher Education"** organized by Teaching Learning Centre Ramanujan College, University of Delhi (Accredited Grade 'A++' by NAAC) In collaboration with ARMY INSTITUTE OF EDUCATION (AIE) Affiliated to Guru Gobind Singh Indraprastha University, Delhi under the aegis of MINISTRY OF EDUCATION PANDIT MADAN MOHAN MALAVIYA NATIONAL MISSION ON TEACHERS AND TEACHING on 23 April – 22 May, 2023

2. Teachers Training Programme in Plasma .its application and Nuclear Fusion conducted in Somaiya Vidyavihar University by Institute for Plasma Research, Feb 20-24, 2023

3. Completed with **A+ grade** One Week Online National Faculty Development Program '**faculty development program on *'Strengthening Academic & Research Pursuit in the 21st century*** jointly organized by Department of Chemistry and Biochemistry, School of Basic Sciences and Research, Sharda University, Greater Noida and Guru Angad Dev Teaching Learning Centre, SGTB Khalsa College, University of Delhi under the Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching (PMMMNMTT) of Ministry of Education on 28th June to 04th July 2021.

➢ *Schools and Workshops Attended*

- Course on vacuum science, technology and applications (CVSTA-2017) organized by Indian Vacuum Society at Bhabha Atomic Research centre, Mumbai (November 22-25, 2017)
- Underwent a two month summer course (May, 2004 –June 2004) on **"Theoretical Calculations of Nonlinear Optical Properties"** at Theory Group, National Chemical Laboratory, Pune, India under the guidance of Dr. Sourav Pal.
- Underwent a two-month course (August, 2004-September, 2004) on **"ZINDO calculations of nonlinear Optical Properties"** at Theoretical Studies Unit, Jawaharlal Nehru Center for Advanced Scientific Research (JNCASR), Bangalore under the guidance of Dr. Swapan K. Pati.

- ***Workshop on "Molecular modeling and pharmainformatics" (July 2-26, 2002),*** at National Institute of Pharmaceutical Education and Research, Punjab, India.

Membership in Academic Bodies

1. Lifetime member of Indian Society of Atomic and Molecular Physics (ISAMP) (Membership Number 1447)
2. Member Dissociative Electron Attachment Club
3. Lifetime member Society for polymer Science in India (SPSI)
4. Organics in Space (National Working Group)
5. Indian Society for Radiation and Photochemical Sciences (Life member, Membership Number 565)

Other Relevant Information

1. Crash course on Computational Chemistry for – **WeChemie Prograame** - a collaborative program between **Somaiya Vidyavihar, BASF India and Indian Chemical Council (Batch 2(July 2024-Sep 2024) and Batch 3 (Nov 2024 – Jan 2025).**
2. Guide & mentor - **WeChemie** - a collaborative program between **Somaiya Vidyavihar, BASF India and Indian Chemical Council – (Batch 1 (Nov 2023- Feb 2024), Batch 2(July 2024-Sep 2024), Batch 3 (Nov – Jan, 2025)**
3. Academic and research committee member *13th International Conference on Sustainable Waste Management and Circular Economy & IPLA Global Forum* Nove- Dec 2023
4. M C Nampoothiripad Award for Science Communication in Malayalam
5. Contributed two articles for elemental encyclopedia in Malayalam Published by Bhasha Institute- 2023 [In print]
6. Designed and edited Department of Polymer Science Brochures 2022 & 2023, Book of abstracts of Conferences/Symposium organized by the Department.
7. Designed websites for Conferences organized by the Department of Polymer Science.
8. "*Circular Economy & Plastics*" Varshika sammelanam -Friends of KSSP, Abu Dhabi chapter, June, 2022
9. Invited speaker in the International Webinar on *Gender and STEM* organized by the Women's Studies Centre, Cochin University of Science and Technology on 8th and 9th March, 2022.
10. Keynote Speaker National science day along with science day - *Why and How do S&T and women fit into the equation?* Fatima Mata National College – Kollam, Kerala, 5th March 2022
11. Invited Talk, Women in Science Christ deemed to be University, November 2021
12. Visited Archeological Survey of India, Mumbai and Elephanta caves for understanding the scope of study in renovation process, 24th Jan 2023
13. Visited Bhopal Campus, Saru maru historical site for initiating studies of rock art painting – March 16-19, 2023.

14. Visited Archeological Survey of India, Mumbai for discussion of potential collaboration on Elephanta cave renovation, 25th March 2023
15. Editor Board Member in Popular Science magazines and Portals
16. Interview with Prof Naba K Mandal, Spoke person Indian Neutrino observatory (INO) for India Vision.
17. Write popular science articles/columns in Newspapers and Magazines (English and Malayalam)
18. Volunteer for National Science Day Conducted by Gujarat State (Demonstrated and explained Gravity Waves)
19. Volunteer for TIFR Open day - explained condensed phase electron irradiation experiment to the school students.
20. SERC school on highly charged ions and atomic collisions - Demonstration of experiment on condensed phase electron irradiation.
21. Invited talk in ISRAPS – 'Molecular Spectroscopy and Dynamics' TIFR -Mumbai
22. Visited Sophia Science and Technology Tokyo, Japan on Invitation