

ELIZABETH KURUVILLA

Email: elizabethkuruvilla@teresas.ac.in

EXPERIENCE

- Assistant Professor at Department of chemistry and centre for research, St.Teresa's College, Ernakulam (June 2017-present)
- Guest Faculty at the Department of Chemistry, Baselius College, Mahatma Gandhi University, Kerala, India (July 2014-March 2017).
- Postdoctoral Research Fellow at the School of Chemistry and Biochemistry, Georgia Institute of Technology, USA (Oct 2007 - Sep 2012).
 - Studied Intercalation mediated Nucleic Acid Assembly and Origin of Life.
 - Developed DNA directed molecular nanowires.
- Research Fellow at Photosciences and Photonics Division, National Institute of Interdisciplinary Sciences and Technology, India (Jan 2003 - Sep 2007).
 - Synthesised series of aryl acridinium and bisacridinium derivatives.
 - Investigated the photophysical properties of the acridinium derivatives.
 - Carried out a detailed comparative study of the DNA binding interactions of aryl acridinium and bisacridinium derivatives.
 - Developed acridine based systems for selective recognition of single strand DNA by fluorescence techniques.
 - Trained and guided two Master's students in completing their research projects.
- Master's Project Student at Photosciences and Photonics Division, National Institute of Interdisciplinary Sciences and Technology, India (Nov 2002 - Feb 2002).
 - Synthesised fluorescent Mono- and Bis- Acridinium derivatives and studied their binding interactions with calf-thymus DNA using various spectroscopic methods.

EDUCATION

- Ph. D in Organic Chemistry (2002-2007), National Institute of Interdisciplinary Sciences and Technology, India
Thesis: Synthesis and Study of Interactions of Novel Acridinium Derivatives with Single Strand and Double Strand DNA
- MSc. Organic Chemistry (1999-2002), School of Chemical Sciences, Mahatma Gandhi University, India, obtained First Class with Distinction (80.3 %), First Rank.
- BSc. Chemistry (1996-1999) C. M. S College, Kottayam, Mahatma Gandhi University, India, obtained First Class with Distinction (94.3 %).

HONOURS

- 2005-2007 Senior Research Fellowship, by Council for Scientific and Industrial Research, New Delhi, India
- 2003-2004 Junior Research Fellowship, by Council for Scientific and Industrial Research, New Delhi, India (Among top 20% of the students qualified in CSIR-JRF held in 2002)

2002 Qualified Graduate Aptitude Test in Engineering (GATE-2002) in the Discipline of Chemistry.

SKILLS

- Adept in working with specialized spectroscopic equipments such as UV-Visible Spectrophotometers, Circular Dichroism Spectrophotometer, Spectrofluorimeter, Nanosecond Laser Flash Photolysis System and Time Correlated Single Photon Counting Systems.
- Experienced in synthesis of small organic molecules.
- Proficient in operation and interpretation of data using NMR, FT-IR, GC-MS.
- Hands on experience in operation of analytical and preparative HPLC for separation of small organic molecules and biomolecules such as DNA.
- Proficient in using DNA Synthesiser for the solid phase synthesis of regular and modified oligonucleotides.
- Skilled in performing analyses of biomolecules using Gel Electrophoresis techniques and Gel Documentation and Imaging systems.
- Experienced radiation worker and skilled in performing experiments involving radiolabelled isotopes especially P32 labelled DNA.
- Familiar with DNA Crystallisation techniques.
- Trained in using AFM.
- Well versed in using various packages such as MS Office, Chem Draw, Origin, Titan and PC Spartan, HyperChem molecular calculation softwares.

PROFESSIONAL AFFLIATION

- Member of American Chemical Society (ACS)
- Member of Chemical Research Society of India (CRSI)

PUBLICATIONS

1. Enhanced non-enzymatic ligation of homo-purine miniduplexes: Support for greater base stacking in a pre-RNA world, **E. Kuruvilla**, G. B. Schuster and N. V. Hud, *VIP article in ChemBioChem* 2013, 14, 45-48. (*Highlighted in Chemical and Engineering News, December 24, 2012, page 16*).
2. Development of self-organizing, self-directing molecular nanowires: Synthesis and characterization of conjoined DNA-2,5-Bis(2-thienyl)pyrrole oligomers, W.Chen, G. Guler, **E. Kuruvilla**, G. B. Schuster, H. Chiu and E. Riedo, *Macromolecules* 2010, 43,4032-4040.
3. Direct evidence of external stimuli induced disassembly of DNA through microscopic techniques, M. Hariharan, **E. Kuruvilla** and D. Ramaiah, *J. Phys. Chem. Lett.* 2010, 1, 834-838.
4. Acridine-viologen dyads: Selective recognition of single-strand DNA through fluorescence enhancement, **E. Kuruvilla** P. C. Nandajan, G. B. Schuster and D. Ramaiah, *Org. Lett.* 2008, 10, 4295-4298.
5. Selective interactions of a few acridinium derivatives with single strand DNA: Study of photophysical and DNA binding interactions, **E. Kuruvilla** and D. Ramaiah, *J. Phys. Chem. B* 2007, 111, 6549-6556.
6. Novel bifunctional acridine-acridinium conjugates: Synthesis and study of their chromophore selective electron transfer and DNA binding properties, **E. Kuruvilla**, J. Joseph and D. Ramaiah, *J. Phys. Chem. B* 2005, 109, 21997-22002.
7. Tuning of intercalation and electron transfer processes between DNA and acridinium derivatives through steric effects, J. Joseph, **E. Kuruvilla**, A. T.

Achuthan, D. Ramaiah and G. B. Schuster, *Bioconjugate Chem.* 2004, 15, 1230-1235.

PAPERS PRESENTED AT CONFERENCES

1. Delivered a talk on "Microscale Volumetric Analysis" in a webinar organized by the department of chemistry, St.Teresa's College, Ernakulam on 28th September 2020.
2. Resource person in the seminar "CHEMCON" ORGANISED BY Department of chemistry and centre for research, Baselius College, Kottayam on 18-12-2019.
3. Resource person at certificate course on Green and Safe Approach to Microscale Volumetric Analysis held at St.Teresa's College, Ernakulam on 29-6-2019.
4. Delivered a lecture on the "Chemical Evolution of Life" during the Alumni meeting of the School of Chemical Sciences, Mahatma Gandhi University held on October 8, 2016.
5. Participated in the three day National Workshop on "Experimental Chemistry – Macro to Micro Level" organized by the Department of Chemistry Baselius College, Kottayam on 28-30 September 2016.
6. Delivered a talk titled "Nobel Prizes in Chemistry" as part of the seminar conducted by the Chemistry Association, Baselius College, Kottayam on January 29, 2016.
7. Delivered a talk titled "Chemical Evolution of Life" in the National Seminar "Recent Trends in Chemistry" (RTriC 2014) held at Baselius College, Kottayam from 6-7 November 2014.
8. Attended the 11th International Workshop on Radiation Damage to DNA, May 15-19, 2010, Atlanta, Georgia.
9. Poster presented at the International Conference on Frontiers of Radiation and Photochemistry, M. G. University, Kottayam, 2007, February 8-12. Bifunctional acridine-acridinium conjugates: Synthesis and study of their chromophore selective electron-transfer and DNA binding properties, **Kuruvilla, E.**; Joseph, J.; Ramaiah, D.
10. Poster presented at the 7th Chemical Research Society of India Symposium, IACS, Kolkatta, 2005, February 4-6. Bisacridinium derivatives: Synthesis and study of photophysical and DNA binding properties, **Kuruvilla, E.**; Joseph, J.; Ramaiah, D.
11. Poster at the 6th Chemical Research Society of India Symposium, IIT, Kanpur, 2004, February 6-8. DNA interactions of 9-substituted acridinium derivatives: Steric and conformational effects, Joseph, J.; **Kuruvilla, E.**; Achuthan, A. T. ; Ramaiah, D.
12. Poster presented at the 3rd Trivandrum International Symposium on Recent Trends in Photochemical Sciences, Regional Research Laboratory, Trivandrum, 2004, January 5-7. Photophysical and DNA binding properties of bisacridinium derivatives, **Kuruvilla, E.**; Joseph, J.; Ramaiah, D.