

# Resume

**Contact:**

Beena James, Assistant Professor  
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**Personal details:**

Date of Birth: 16. 03.1977  
Sex: Female  
Nationality: Indian

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**Academic credentials:-**

- 2021** : **Research Guide University of Kerala**
- 2007** : **Doctor of Philosophy** (Ph. D) in Organic Chemistry, University of Kerala, India,  
Thesis: "**Synthesis and Exploration of the Chemistry of Novel Polycyclic Cage Compounds.**" Supervisor: **Dr. Mangalam S. Nair**, National Institute For Interdisciplinary Science And Technology (Formerly Regional Research Laboratory), **Council of Scientific and Industrial Research (CSIR)**, India.
- 2000** : **Master of Science** (M. Sc) in Organic Chemistry from Mahatma Gandhi University, Kerala, India
- 1997** : **Bachelor of Science** (B. Sc) in Chemistry from Mahatma Gandhi University, Kerala, India.

**Relevant experience:-****Research Experience:-****Project**

- 2021** : KSCSTE (Science Research Scheme)  
**Synthesis and Characterization of Photoresponsive**

**Polymers**

**October 2010 –December 2013:** **Research Associate**, R & D of HLL lifecare limited, a "Mini Ratna" Company under ministry of health and family welfare, Govt. of India.

**Projects:**

- Development of absorbable antibacterial surgical sutures
- Synthesis of nano particles for biomedical applications
- Synthesis of fast degrading polymers for biomedical applications

**August 2008 –March 2010** : **Post-doctoral research Scientist**, Molecular Smart System Group, Nanotechnology Research Institute, AIST, Central 5-2, Higashi Tsukuba, Ibaraki 305-8565, Japan.

**Projects:** -

- Synthesis of Oligomeric Multifunctional Gelators
- Synthesis and Characterization of dendrimeric Polymers.

**May 2002 - May 2007**

: **Doctoral student:** University of Kerala, India

- Achieved a facile synthesis of biologically active novel polycyclic and hetero cyclic cage systems *via* reaction with amines using ionic liquids.
- Disclosed an unprecedented synthesis of aralkyl substituted hetero cyclic cage systems through Montmorillonite K-10 catalyzed Friedel-Crafts reactions.
- Achieved a facile synthesis of functionalized higher cage systems through hetero Diels-Alder reaction of tetracyclic cage compound with fulvenes.
- Synthesized novel polycyclic cage moieties *via* the ‘uncaging’ of higher cage systems under strong base/sonication conditions.
- Established various carbon-hetero atom bond-forming methods through reactions of polycyclic cage systems with amines and fulvenes.

**April 2000- May 2002**

: **Project assistant:** National Institute for Interdisciplinary Science and Technology (Formerly Regional Research Laboratory), CSIR, India. Mentor: Dr. C.K.S. Pillai and Dr. Mangalam S. Nair, Regional Research Laboratory (CSIR), India

**Project**

- High Bonding Phenolics and Multifunctional Epoxy Resins for Defense Applications

**Teaching Experience:-**

**June 2014-till date**

: **Assistant Professor**, Department of Chemistry, St. Michael's College, Cherthala, Kerala.

**July 2010 – September 2010**

: **Lecturer in Chemistry**, NSS College for Women, Neeramankara Trivandrum (FIP-Guest).

**Research Interests:-**

- Synthesis of Multifunctional Gelators
- Synthesis of nano particles, polymers and hydrogels for biomedical applications
- Synthesis and Characterization of dendrimeric polymers.
- Synthesis of various heterocyclic compounds.
- Synthesis of biologically active strained polycyclic cage compounds

**Skills:-**

- Excellent background in synthesizing various heterocyclic compounds.
- Highly experienced in synthesizing various biologically active

polycyclic cage compounds.

- Extensive skills in synthesizing multifunctional and stimuli responsive hydrogelators.
- Excellent knowledge in purification and characterization of organic compounds using NMR, IR, UV, Mass, Chromatography, HPLC and GC.
- Excellent communication skills, Creative, Organized and a good team worker.

#### Honors and Awards:-

- CSIR Senior Research Fellowship (2004).
- CSIR Junior Research Fellowship (2002).
- Qualified Graduate Aptitude Text in Engineering (GATE) exam (2002).

#### PUBLICATIONS:

1. **James, B.**, Ramakrishnan, R. & Aprem, A.S. "Development of Environmentally Safe Biodegradable, Antibacterial Surgical Sutures Using Nanosilver Particles." *J Polym Environ* (2021). <https://doi.org/10.1007/s10924-021-02048-y>. Published 19 January 2021.
2. Seena Elizabeth George, Vibin Ipe Thomas, **Beena James**, Pearl Augustine, C. Rajalakshmi, P.Manoj. "Modelling and synthesis of solution processable dibenzothiophene derivative for organic electronics." *Materials Today: Proceedings* 33 (2020) 1288–1292.
3. M. Gayathri Mohan, Aravind Krishnan, **Beena James**, Pearl Augustine, Manoj P. "Theoretical studies of squaraine and functionalized 2,1,3-benzothiadiazole molecules for solar cell applications." *Materials Today: Proceedings* 33 (2020) 1268–1273.
4. Sajin K. Francis, **Beena James**, Sunil Varughese & Mangalam S. Nair. "Phytochemical Investigation on *Myristica fragrans* stem bark." *Natural Product Research*, 2019, 33, 8, 1204-1208.
5. **B. James**, M. Yoshida. "Organic Compounds with Ionic Structure: Preparation and Photoresponsive Polyelectrolyte based on the materials." *Japanese Patent.No. 5414069*.
6. **Beena James** and E. Suresh. "Crystal Structure Details of Novel Polycyclic Cage Compounds Appended with Aromatic and Heteroaromatic Rings." Published a paper in *Michaels Journal of Academic Research (MJAR)* 2017, 1, 53-58 an Interdisciplinary Journal of St. Michael's College Cherthala.
7. **James, B.**; Viji, S.; Mathew, S.; Suresh, E.; Lakshmanan, D.; Kumar, R. A.; Nair, M. S. Synthesis of Highly Functionalized, Biologically Active Novel Polycyclic Caged Amides. *Tetrahedron Lett.* 2007, 48, 6204.
8. **James, B.**; Suresh, E.; Nair, M. S. Friedel-Crafts alkylation of a cage enone: Synthesis of Aralkyl Substituted Tetracyclo[5.3.1.0<sup>2,6</sup>.0<sup>4,8</sup>]undeca-9,11-diones and the Formation of Fascinating Novel Cage Compounds with Pyrrole and Thiophene using Montmorillonite K-10. *Tetrahedron Lett.* 2007, 48, 6059.

9. **James, B.;** Suresh, E.; Nair, M. S. Hetero Diels-Alder Reaction of 3-Bromo-7-(bromomethyl)tetracyclo[5.3.1.0<sup>2,6</sup>.0<sup>4,8</sup>]undec-10(12)-ene-9,11-dione with Pentafulvenes: Facile Synthesis of Novel Polycyclic Cage Compounds Having Pyran Ring. *Synlett.* **2006**, 20, 3479.
10. **James, B.;** Rath, N. P.; Suresh, E.; Nair, M. S. Formation of Novel Polycyclic Cage Compounds through 'Uncaging' of Readily Accessible Higher Cage Compounds. *Tetrahedron Lett.* **2006**, 47, 5775.
11. Sudhir, U.; **James, B.;** Joly, S.; Nair, M. S. Formation of Highly Caged compounds through Diels-Alder Cycloaddition of 3-Bromo-7-(bromomethyl)tetracyclo[5.3.1.0<sup>2,6</sup>.0<sup>4,8</sup>]undeca-10(12)-ene-9,11-dione with itself and with Cyclopentadiene. *Res. Chem. Int.* **2004**, 30, 247.
12. Sudhir, U.; **James, B.;** Joly, S.; Nair, M.S. Diels-Alder Reactivity of 2-(Bromomethyl)-1,4-quinone and 2-Bromo-5-(bromomethyl)-1,4-quinone with Cyclopentadiene and the Synthesis of New Substituted Pentacyclic Systems. *Res. Chem. Int.* **2003**, 29, 523.

#### **POSTERS PRESENTED/ SEMINARS PARTICIPATED:-:-**

1. Participated in "International Conference on Photochemistry and Sustainable Energy (ICPSE) on 16-19<sup>th</sup> October **2019** conducted by department of Chemistry, St. Michael's College, Cherthala in association with Government College Kottayam and Inter University Instrumentation Centre, M G University Kottayam
2. **Beena James,;** M. Yoshida. "Synthesis and Photophysical Studies of Azobenzene Polymeric Gels". Presented a paper in 4<sup>th</sup> International conference on Membranes (ICM) September 30<sup>th</sup> to October 3<sup>rd</sup>, **2017**, organized by department of Chemistry St. Michael's College Cherthala, in association with Center for Environment Education and Technology (CEET) Kottayam, Kerala. **Poster #P-26.**
3. Participated in National conference on 17<sup>th</sup> January **2017**, conducted by department of Chemistry, Government College Nattakam sponsored by UGC.
4. **Beena James** and E. Suresh. *MJAR*, **2017**, 1, 53-58. Published a paper in *Michael's Journal of Academic Research (MJAR)* an Interdisciplinary Journal of St. Michael's College Cherthala.
5. Participated and chaired the session of "Recent Trends in Chemistry", **RTIC-2016**, on 15 & 16<sup>th</sup> March 2016, UGC sponsored national seminar, organized by the department of Chemistry, St. Paul's College, Kalamassery
6. **Beena J.;** "Biodegradable surgical sutures using nano particles". Presented a paper in International conference on Materials for the Millennium, Matcon **2016**, conducted by department of Applied Chemistry CUSAT sponsored by UGC. **Poster # SNM156.**

7. **Beena James**, E. Suresh. "Crystal Structure Details of Novel Polycyclic Cage Compounds Appended with Aromatic and Heteroaromatic Rings." Poster presented in National Seminar on NMR Spectroscopy and its biomedical Applications, (**NSNBA-2016**) sponsored by KSCSTE, at Mar Ivanios college, Trivandrum-6th and 7th October **2016. Poster # PP-8.**
8. Participated the **FLAIR** (Fostering Linkages in Academic Innovation and Research) Orientation Program **2016-17** on 01-09-2016, at Maria Rani Training Center, Sreekariyam, Thiruvanthapuram conducted by New Initiatives in Higher Education, Department of Higher Education Government of Kerala.
9. Participated the **FLAIR** (Fostering Linkages in Academic Innovation and Research) Induction Training Programme in 26-28<sup>th</sup> September **2016** at Maria Rani Training Center, Sreekariyam, Thiruvanthapuram conducted by New Initiatives in Higher Education, Department of Higher Education Government of Kerala
10. Participated in one day workshop on syllabus revision of First Degree Programme in Chemistry (Core & Complementary) jointly organized by Board of Studies in Chemistry (pass), University of Kerala and Academy of Chemistry Teachers held at S.N College Kollam on **15-12-2016.**
11. Participated in the National Seminar on 'Recent Advances in Photochemistry" (**NSPC 2015**) held at Department of Chemistry, St. Michael's College Cherthala in association with Nanotechnology and Advanced Materials Research Centre (NAMRC), C.M.S College Kottayam on December 3-4, 2015 and sponsored by University Grants Commission (UGC), India.
12. Participated as a delegate in International conference on "Nanotechnology: **Nano India-2013**" at National Institute for Interdisciplinary Science and Technology, CSIR, Trivandrum on **2013**, February 19 & 20.
13. Participated as a delegate in International conference on "Frontiers of Nanotechnology: Impact on India" at 3rd Bangalore Nano **2010**, December 8 & 9.
14. **Beena James.**; Mangalam, S. Nair. Synthesis of Nitrogen Containing Polycyclic Cage Compounds with Potential Anti-viral Activity. Joint International Conference on "Building Bridges, Forging Bonds for 21st Century Organic Chemistry and Chemical Biology" (ACS CSIR OCCB 2006), Pune, January-**2006**, **Poster # P-18.**
15. Beena James.; Mangalam, S. Nair. Formation of Novel Cage Compounds through Uncaging of Readily Accessible 1,9-Bishalomethylpentacyclo[5.4.0.0<sup>2,6</sup>.0<sup>3,10</sup>.0<sup>5,9</sup>]undeca-8,11-diones. International Symposium on Advances in Organic Chemistry, Mahatma Gandhi University, Kerala, January-**2006. Poster # P-141.**

## **Membership**

1. Life Member of Kerala Academy of Sciences, Membership Number: L 573
2. Life Member of Academy of Science Teachers.
3. Member of board of Studies/ Examinations -MSc/BSc Kerala University.
4. Fostering Linkages in Academic Innovation and Research (**FLAIR**), New Initiatives in Higher Education, Department of Higher Education Government of Kerala membership.