

## Curriculum Vitae

Dr. Sunilkumar Puthenpurackal Narayanan  
Associate Professor (NMR Faculty), School of Chemical Sciences  
Mahatma Gandhi University, Priyadarshini Hills P. O.,  
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(This position is from March 2025 onwards)

### Areas of specialization

Biomolecular NMR spectroscopy, Molecular Spectroscopy and Structural Biology/Chemistry.

### Research areas

(1) Structure determination of small molecules, peptides and proteins by NMR, and other spectroscopic methods; (2) Study of biomolecular self-assembly by NMR (3) Search for new anti-amyloid agents (4) Molecular dynamics study by variable high pressure NMR spectroscopy; (4) Solid phase peptide synthesis

### Employment history

Sept. 2018-March 2025: Scientist, NMR Facility, Institute for Integrated Programmes and Research in Basic Sciences, Mahatma Gandhi University, Priyadarshini Hills P. O., Kottayam-686560, Kerala, India

July 2016-Dec 2016    **Ad hoc Assistant Professor**, Department of Chemistry, National Institute of Technology, Kerala, India-673601.

Sept 2012-June 2016    **Postdoctoral Fellow**, Institute of Biophysics and Physical Biochemistry, Centre of Magnetic Resonance in Chemistry and Biomedicine (CMRCB), University of Regensburg, D-93040 Regensburg, Germany.

Jan 2010 - Jan 2012    **Postdoctoral Fellow**, NMR Division, High Pressure Protein Research Center, Institute of Advanced Technology, Kinki University, 930 Nishimitani, Kinokawa 649-6493, Japan.

- Aug 2009-Dec 2009 **Postdoctoral Trainee**, National NMR Facility, Department of Chemical Sciences, Tata Institute of Fundamental Research, Homi Bhabha Road, Mumbai-400 005, India
- May 2007- July 2009 **Postdoctoral Fellow**, Bioinformatics Infrastructure Facility, Kannur University, Kerala-670 661, India.
- Oct. 2006-April 2007 **Postdoctoral Fellow**, Bio-NMR division, Department of Chemistry, Pusan National University, Busan-609 735, Republic of Korea.
- June 2005-July 2006 **Lecturer**, Department of Bioinformatics, Kristu Jyoti College, Changanacherry, Kerala, India.

### **Education**

- 1999 -2005 **Ph.D., Biophysics**, Mahatma Gandhi University, Kerala, India.  
*Title:* Structure of some peptides rich in hydrophobic residues.
- December 2000 **Joint CSIR-UGC National Eligibility Test in Chemistry.**
- 1995-1997 **M.Sc., Chemistry** (64.5 % marks), Mahatma Gandhi University, Kerala, India.
- 1992-1995 **B.Sc., Chemistry** (86 % marks), Mahatma Gandhi University, Kerala, India

### **Research grants**

*Title:* Identification of new anti-inflammatory peptides and design of most appropriately potent one by docking, NMR and inhibitory studies; *Amount sanctioned:* Rs. 1,677,000/-; *Period:* 3 years; *Funding agency:* Kerala State Council for Science Technology & Environment, India; *Year of sanction:* 2009.

### **Training programs attended**

- 15-25 June 2004 **National School on New Dimensions to NMR from Molecules to Human Behaviour**, Institute of Himalayan Bioresource Technology, Palampur, Himachal Pradesh, India.
- Sept.– Nov. 2023 **MOOC in NMR spectroscopy**, University of Lille, France

## **Awards and Recognitions**

### ***Fellowships***

2002-2004	Senior Research Fellowship, Council of Scientific Industrial Research, India.
2007- 2009	Postdoctoral Fellowship, Kerala Biotechnology Commission, Kerala, India.

### ***Affiliation to Scientific Bodies***

Life member of the National Magnetic Resonance Society India.

Life member and Founder Secretary of Magnetic Resonance Society Kerala  
(<http://mrs-kerala.org/>).

### ***Editorial Board Membership***

Associate Editorial Board Member, Current Applied Polymer Science  
(<https://benthamscience.com/journal/caps/editorial-board> )

### ***Invited talks***

1. “NMR instrumentation”, National Seminar on NMR Spectroscopy, 29<sup>th</sup> & 30<sup>th</sup> November 2024, jointly organized by Magnetic Resonance Society Kerala and Department of Chemistry, Amrita Viswa Vidyapeetham, Kollam, Kerala, India (*Invited talk*).
2. “NMR instrumentation”, National Seminar on NMR Spectroscopy, 16<sup>th</sup> & 17<sup>th</sup> August 2024, jointly organized by Magnetic Resonance Society Kerala and Department of Chemistry, St. Thomas College, Thrissur, Kerala, India (*Invited talk*).
3. “Basic principles and applications of NMR spectroscopy” National Workshop on Advanced Materials Characterization, 18<sup>th</sup> & 19<sup>th</sup> January 2024, Department of Chemistry, Government College, Kottayam, Kerala, India (*Invited talk*).
4. “NMR instrumentation”, National Seminar on NMR Spectroscopy, 17<sup>th</sup>-19<sup>th</sup> January 2024, jointly organized by Magnetic Resonance Society Kerala and Department of Chemistry, St. Michael’s College, Cherthala, Kerala, India (*Invited talk*).
5. “Kinetics of self-assembly of L-histidine from real time NMR spectroscopy” Two-day National Seminar on Exploring Frontiers in Chemical Innovation (EFCI-2023), 14<sup>th</sup> & 15<sup>th</sup> December 2023, Department of chemistry, Baselius College, Kottayam, Kerala, India (*Invited talk*).

6. “*Basic principles and applications of NMR spectroscopy*” Curriculum enrichment program in NMR spectroscopy, 1<sup>st</sup> November 2023, Department of Chemistry, Kuriakose Gregorios College, Pampady, Kerala, India (*Invited talk*)
7. “*NMR parameters and the factors affecting them*” National Seminar on NMR Spectroscopy, 20<sup>th</sup> and 21<sup>st</sup> October 2023 Jointly organized by Magnetic Resonance Society Kerala and Mar Athanasius College Kothamangalam, Kerala, India (*Invited talk*).
8. ‘*NMR Instrumentation*’ National Symposium on Magnetic Resonance, 23-25 June 2023, Jointly organized by Magnetic Resonance Society Kerala and Government College Kottayam, Kerala, India (*Invited talk*).
9. ‘*Introduction to NMR spectroscopy*’ National Seminar on NMR Spectroscopy, 4-5 November 2022, Jointly organized by Magnetic Resonance Society Kerala and Nirmalagiri College, Kuthuparamba, Kerala, India (*Invited talk*).
10. ‘*NMR Instrumentation*’ National Seminar on NMR Spectroscopy, 22-23 April 2022, Jointly organized by Magnetic Resonance Society Kerala and St. Thomas College Palai, Kerala, India (*Invited talk*).
11. ‘*Variable High Pressure NMR of Proteins*’ Online Workshop on Methods of Data Acquisition and Analysis in NMR and HR-MS, 20-26 September 2021, Organized by Department of Chemistry, National Institute of Technology, Calicut, Kerala, India (*Resource Person*).
12. ‘*Structural transitions in full-length human prion protein detected by NMR spectroscopy*’ International Online Conference on Macromolecules: Synthesis, Morphology, Processing, Structure, Properties and Applications (ICM-2021), 10-12 September 2021 Mahatma Gandhi University, Kottayam, Kerala, India (*Invited talk*)
13. ‘*NMR Spectroscopy: Basics, Instrumentation and Applications*’ Webinar on Bioinstrumentation Frontiers, 03 July 2021, Jointly organized by National Institute of Plant Science Technology, Mahatma Gandhi University, Kottayam, Kerala, India; St. Joseph’s College, Irunjalakuda, Thrissur, Kerala; Department of Life Sciences, University of Calicut, Kerala & Kerala Police Academy (*invited talk*)
14. ‘*Possible molecular mechanism for the differential action of acute promyelocytic leukemia drug - arsenic trioxide in the presence of eugenol on leukemia cells (HL-60) and cardiomyocytes (H9c2) - inference from NMR study*’ International Webinar on Advances in Physics, Chemistry, Mathematics, Computer Sciences & Biological Sciences (CONIAPS XXVI), 18-20 December 2020, Mahatma Gandhi University, Kottayam, Kerala, India (*Invited talk*)

15. *'Effect of pressure on biopolymers - view of an NMR Spectroscopist'* International Online Conference on Macromolecules (ICM 2020), 13-15 November 2020, Mahatma Gandhi University, Kottayam, Kerala, India (*Invited talk*).
16. *'Variable high pressure NMR spectroscopy'* Webinar on NMR: Theory, Instrumentation and Applications, 20-23 August 2020, Mahatma Gandhi University, Kottayam, Kerala & Kerala State Council for Science Technology and Environment (KSCSTE).
17. *'The antioxidant molecule eugenol can interact with the anti-cancer drug arsenic at physiological pH, but not at the pH of cancer cells- an NMR study'* International Conference on Natural Polymers, Bio-Polymers, Bio-Materials, their Composites, Nanocomposites, Blends, IPNs, Polyelectrolytes and Gels: Macro to Nano Scales (ICNP – 2019), 6-8 December 2019, Mahatma Gandhi University, Kottayam, Kerala, India (*Invited talk*).
18. *'Functional State Of The Minimum DNA-Binding Domain (Repeats R2R3) Of cMyb Protein, Under Closely Physiological Conditions, Revealed By NMR'*, Fifth International Conference on Polymer Processing and Characterization (ICPPC2019), 11 – 13 October 2019, Mahatma Gandhi University, Kottayam, Kerala, India (*Invited talk*).
19. *'Applications of NMR spectroscopy'* Inaugural talk of Chemistry Association, 26<sup>th</sup> September 2019, Department of Chemistry, St. Xavier's college, Kothavara, Vaikom, Kerala (*Inaugural talk*).
20. *'Biological Applications of NMR spectroscopy'* One Day International Seminar Bio Commmercium'19, 7<sup>th</sup> August 2019, Department of Microbiology, SAFI Institute for Advanced Study, Rasiya Nagar, Vazhayoor East PO Ramanatukara (via) Malappuram Dist, Kerala (*Invited talk*).
21. *'Principles and applications of NMR'* Training on structural data interpretation, 14-15 March 2019, School of biosciences, Mahatma Gandhi University, Kottayam, Kerala (*Resource person*).
22. *'Allosteric inhibition of signaling proteins by targeting rare interaction states- a new strategy for drug design'* National Seminar on Recent Biochemical Approaches in Therapeutics (RBAT2019), 23-25 January 2019, Department of Biochemistry, University of Kerala, Kerala, India (*Invited talk*).
23. *'Variable high-pressure NMR and protein dynamics in wide time scale'* International Conference on Materials and Spectroscopy (ICMS2018), 11-12 December 2018, Saveetha Engineering College, Chennai, Tamilnadu, India (*Invited talk*).
24. *'Off-target interactions of some commonly used drugs with human  $\alpha$ -thrombin'* Sixth International Conference on Natural Polymers (ICPN 2018), 07-09 December 2018, Mahatma Gandhi University, Kottayam, Kerala, India (*Invited talk*).
25. *'Cavities are the source of conformational transitions in human prion protein- an NMR spectroscopic study'* International Conference on Advances in Materials Sciences (ICAMS2018), 24-25 October 2018, Sree Sankara College, Kalady, Kerala, India (*Invited talk*).

26. *'Hidden conformational states of proteins might be the functionally dominant states- Inference from high pressure NMR studies'* International Conference on Recent Trends in Material Science and Technology (ICMST2018), 10-13 October 2018, Indian Institute of Space Science and Technology, Thiruvananthapuram, Kerala, India (*Invited talk*).
27. *'Drug development and variable high pressure NMR spectroscopic technique'* Second world congress on Microscopy: Instrumentation, Techniques and Applications in Life Sciences and Material Sciences (WCM2018), 10-12 August 2018, Mahatma Gandhi University, Kottayam, Kerala, India (*Invited talk*).
28. *'Nuclear Magnetic Resonance Spectroscopy'* Seminar on New Avenues in Bioscience Research, 19-20 March 2018, Mahatma Gandhi University, Kottayam, Kerala, India (*Invited talk*).
29. *'Extensively hydrated but folded: a novel state of globular proteins'* International Conference on Molecular Spectroscopy (ICMS 2017), 8-10 December 2017, School of Chemical Science, Mahatma Gandhi University, Kottayam, Kerala, India (*Invited talk*).
30. *'NMR spectroscopy can reveal diverse properties of molecules'* National seminar on Advanced Instrumentation Techniques in Material Science, 13-14 November 2017, Department of Chemistry, Government College Kottayam, Kerala, India (*Invited talk*).
31. *'Effect of loop mutation on protein dynamics- a high pressure NMR study of E. coli DHFR protein'* Second international Conference on advanced polymeric materials (ICAPM 2017), 7-9 April 2017, School of Chemical Science, Mahatma Gandhi University, Kerala, India (*Plenary lecture*).
32. *'Structural transitions in full-length human prion protein detected by xenon as probe and spin labelling of the N-terminal domain'* Fourth international conference on polymer processing and characterization (ICPPC 2016), 9-11 December 2016, School of Chemical Science, Mahatma Gandhi University, Kerala, India (*Invited talk*).
33. *'Variable high pressure NMR spectroscopy of proteins'* International conference on macromolecules: Synthesis, morphology, processing, structure, properties and applications, (ICM 2016), 13-15 May 2016, School of Chemical Science, Mahatma Gandhi University, Kerala, India (*Invited talk*).
34. *'Variable-pressure techniques are efficient methods for studying hidden conformers and dynamics in proteins'* International Conference on Advances in Biological Sciences (ICABS 2012), 15-17 March 2012, School of life sciences, Kannur University, Kerala, India (*Invited talk*).
35. *'Molecular Modelling'* National Seminar on Emerging trends in Chemo informatics, 7 - 9 March 2006, Department of Chemistry, St. Berchmans College, Changanacherry- 686101, Kerala, India (*Invited talk*).

#### **Conference sessions chaired**

1. National Seminar on NMR Spectroscopy, 20<sup>th</sup> and 21<sup>st</sup> October 2023 Jointly organized by Magnetic Resonance Society Kerala and Mar Athanasius College Kothamangalam, Kerala, India.

2. International Online Conference on Macromolecules: Synthesis, Morphology, Processing, Structure, Properties and Applications (ICM-2021), 10-12 September 2021, Mahatma Gandhi University, Kottayam, Kerala, India
3. Webinar on NMR: Theory, Instrumentation and Applications, 20-23 August 2020, Mahatma Gandhi University, Kottayam, Kerala & Kerala State Council for Science Technology and Environment (KSCSTE).
4. International Conference on Natural Polymers, Bio-Polymers, Bio-Materials, their Composites, Nanocomposites, Blends, IPNs, Polyelectrolytes and Gels: Macro to Nano Scales (ICNP – 2019), 6-8 December 2019, Mahatma Gandhi University, Kottayam, Kerala, India
5. Fifth International Conference on Polymer Processing and Characterization (ICPPC2019), 11 – 13 October 2019, Mahatma Gandhi University, Kottayam, Kerala, India
6. Second world congress on Microscopy: Instrumentation, Techniques and Applications in Life Sciences and Material Sciences (WCM2018), 10-12 August 2018, Mahatma Gandhi University, Kottayam, Kerala, India
7. International Conference on Molecular Spectroscopy (ICMS 2017), 8-10 December 2017, School of Chemical Science, Mahatma Gandhi University, Kottayam, Kerala, India
8. Second international Conference on advanced polymeric materials (ICAPM 2017), 7-9 April 2017, School of Chemical Science, Mahatma Gandhi University, Kerala, India.
9. Fourth international conference on polymer processing and characterization (ICPPC 2016), 9-11 December 2016, School of Chemical Science, Mahatma Gandhi University, Kerala, India
10. International conference on macromolecules: Synthesis, morphology, processing, structure, properties and applications, 13-15 May 2016, School of Chemical Science, Mahatma Gandhi University, Kerala, India.

#### ***Journal reviewer***

1. Biotech (Springer Journal)
2. Comparative Clinical Pathology (Springer Journal)
3. European Journal of Biophysics (Science publishing group)

**Number of M. Sc. dissertations supervised:** Completed – 7

**Number of M. Phil. dissertations supervised:** Completed -1

### **Biological Magnetic Resonance Bank (BMRB) entries**

1. **Sunilkumar P. N.**, A. Maeno, Y. Wada, S. Tate and K. Akasaka (2015), Sequential backbone HN, N, Ca and Cb assignments of *E.coli* dihydrofolate reductase G67V mutant-folate binary complex, BMRB ID: 11556.
2. **Sunilkumar P. N.**, A. Maeno, Y. Wada, S. Tate and K. Akasaka (2015), Sequential backbone HN, N, Ca and Cb assignments of *E.coli* dihydrofolate reductase-folate binary complex at pH 7.0 and 308 K, BMRB ID: 25019.

### **Papers published in journals**

1. Anakha Rejil, Arya Selvaraj, Seno Jose, Divya Gopalakrishnan Nair and **Sunilkumar Puthenpurackal Narayanan** (2024), The self-assembly of single amino acids and materials rich in a particular amino acid, *Current Applied Polymer Science*, 7, 61-76.
2. Jenat Pazheparambil Jerom, Ajmal Jalal, Ann Liya Sajan, Reshma Soman, Raveendran Harikumaran Nair , **Sunilkumar Puthenpurackal Narayanan** (2024), In-vitro Neuro-2a cytotoxicity analysis and molecular docking investigation on potential anti-amyloid agents from *Adiantum lunulatum*, *Heliyon*, 10, e38127
3. Rajagopal Rajesh, Olencheri Karimpanakkal Sandhya, **Sunilkumar Puthenpurackal Narayanan** and Rajesh Kunjanpillai (2024), Lanthanoids in Hydroarylations: Yb(III)- and Tb(III)-Catalyzed Addition of Arylamines to Activated Olefins, *Synthesis*, 56(13): 2047-2058.
4. Jenat Pazheparambil Jerom, Sooryalekshmi Madhukumar , Raveendran Harikumaran Nair, **Sunilkumar Puthenpurackal Narayanan** (2023), Anti-amyloid potential of some phytochemicals against A $\beta$ -peptide and  $\alpha$ -synuclein, tau, prion, and Huntington proteins, *Drug Discovery Today*, Available online 17 October 2023, 103802, <https://doi.org/10.1016/j.drudis.2023.103802>.
5. Ajitha Ajikumar, Anakha Premkumar and **Sunilkumar Puthenpurackal Narayanan** (2023), The self-assembly of L-histidine might be the cause of histidinemia, *Nature Scientific Reports* 13, 17461. <https://doi.org/10.1038/s41598-023-44749-5>.
6. Prakash Binu, Reshma Soman, Omar Zakhariah Hisham, **Sunilkumar Puthenpurackal Narayanan** & Raveendran Harikumaran Nair (2021): Acute promyelocytic leukemia drug – arsenic trioxide in the presence of eugenol shows differential action on leukemia cells (HL-60) and cardiomyocytes (H9c2) – inference from NMR study, *Toxicology Mechanisms and Methods*, 31(6):457-466.
7. Amith Abraham, Shaji Philip, **Sunilkumar P Narayanan**, Kuruvilla C Jacob, Sindu Raveendran, Ashok Pandey, Byoung - In Sangand Jayachandran Kochupurackal (2019); Induction of systemic acquired resistance in *Hevea brasiliensis* (Willd. ex A.Juss.) Müll.Arg. by an endophytic bacterium antagonistic to *Phytophthora meadii* McRae, *Indian Journal of Experimental Biology*, 57, 796-805.



8. **Sunilkumar P. N.**, Sadasivan C., Devaky K. S. and Haridas M. (2019); Solid-phase synthesis and conformation of two overlapping fragments of SPFE peptide using 2D-NMR, *Indian Journal of Chemistry-Section B*, 58B, 714-719.
9. K. Mathias, M. Spoerner, T. Pham, **Sunilkumar P. N.**, W. Kremer and H. R. Kalbitzer (2017); Pressure response of  $^{31}\text{P}$  chemical shifts of adenine nucleotides, *Biophysical Chemistry*, 231:50-54.
10. **Sunilkumar P. N.**, Divya G. Nair, D. Schaal, M. Aguiar, S. Wenzel, W. Kremer, S. Schwarzingen and H. R. Kalbitzer (2016); Structural transitions in full-length human prion protein detected by xenon as probe and spin labelling of the N-terminal domain, *Nature Scientific Reports*, 6, doi:10.1038/srep28419.
11. **Sunilkumar P. N.**, A. Maeno, Y. Wada, S. Tate and K. Akasaka (2016); Sequential backbone resonance assignments of the E. coli dihydrofolate reductase Gly67Val mutant: folate complex, *Biomolecular NMR Assignments*; 10(1):125-9.
12. S. Inaba, A. Maeno, K. Sakurai, **Sunilkumar P. N.**, T. Ikegami, K. Akasaka and M. Oda (2015); Functional conformer of c-Myb DNA-binding domain revealed by variable temperature studies, *FEBS Journal*, 282(23):4497-514.
13. Amith A., Shaji P., Manoj K. J., **Sunilkumar P. N.**, Kuruvilla C. J., and Jayachandran K. (2015); Phenazine-1-carboxylic acid mediated anti-oomycete activity of the endophytic *Alcaligenes* sp. EIL-2 against *Phytophthora meadii*. *Microbiological Research*, 170, 229-234.
14. Divya G. Nair, **Sunilkumar P. N.** and Sadasivan C. (2015); Interactions of some commonly used drugs with human  $\alpha$ -thrombin, *Journal of Biomolecular Structure and Dynamics*, 33 (5), 1008-15.
15. Amith A., **Sunilkumar P. N.**, Shaji P., Divya G. Nair and Jayachandran K. (2013); Molecular modelling and docking studies of an  $\alpha$ -1,4-amylase from endophytic *Bacillus myloliquefaciens*, *Frontiers in Life Science*, 7 (3-4), 140-147.
16. H. R. Kalbitzer, I. C. Rosnizeck, C. E. Munte, **Sunilkumar P. N.**, V. Kropf and M. Spoerner (2013); Intrinsic Allosteric Inhibition of Signaling Proteins by Targeting Rare Interaction States Detected by High-Pressure NMR Spectroscopy, *Angewandte Chemie International Edition*, 52(52), 4242–4246.
17. Amith A., **Sunilkumar P. N.**, Shaji P., Divya G. Nair, Aparna C. and Jayachandran K. (2013); In silico characterization of a novel  $\beta$ -1,3-glucanase gene from *Bacillus amyloliquefaciens*-a bacterial endophyte of *Hevea brasiliensis* antagonistic to *Phytophthora meadii*, *Journal of Molecular Modeling*, 19(3), 999-1007.
18. **Sunilkumar P. N.**, A. Maeno, H. Matsuo, M. Oda, H. Morii and K. Akasaka (2012); Extensively hydrated but folded – a novel state of globular proteins stabilized at high pressure and low temperature, *Biophysical Journal*, 102 (2), L8-L10.

19. **Sunilkumar P. N.**, Sadasivan C., Devaky K. S. and Haridas M. (2009); Synthesis and conformation of a hexapeptide fragment (3-8) of SPF peptide by NMR and restrained molecular dynamics, *Indian Journal of Chemistry-Section B*, 48B(09), 1294-1298.
20. Haridas M., Abhilash J. and **Sunilkumar P. N.** (2009); Discovery of new Anti-inflammatory Drug-leads from Marine Microorganisms: Bioinformatics way, *Biobytes*, 4, 46-51.
21. **Sunilkumar P. N.**, Divya G. Nair, Sadasivan C. and Haridas M. (2009); Disruption mechanism in the helix of SPF peptide by interchanging Glu5 and Lys10 residues: Inference from molecular dynamics study, *Journal of Biomolecular Structure and Dynamics*, 26(4), 491- 496.
22. Divya G. Nair, **Sunilkumar P. N.** and Sadasivan C. (2008); Modeling of Factor XIII Activation Peptide (28-41) V34L Mutant Bound to Thrombin, *Journal of Biomolecular Structure and Dynamics*, 26(3), 387-394.
23. **Sunilkumar P. N.**, Sadasivan C., Devaky K. S. and Haridas M. (2008); Conformational analysis of a residue substituted fragment (349-364) of Human Lactoferrin (HLf) protein by <sup>1</sup>H NMR and restrained molecular dynamics, *Indian Journal of Biochemistry and Biophysics*, 45, 51-56.
24. **Sunilkumar P. N.**, Sadasivan C., Devaky K. S. and Haridas M. (2007); Conformation of an octapeptide fragment (2-9) of kaliocin-1 in DMSO-d<sub>6</sub> by <sup>1</sup>H NMR and restrained molecular dynamics, *Indian Journal of Biochemistry and Biophysics*, 44, 44-49.
25. **Sunilkumar P. N.**, Devaky K. S., Sadasivan C. and Haridas M. (2002); Conformational Analysis of Sea Cucumber (*Caudina arenicola*) C Globin 94-97 fragment, Pro-Glu-leu-leu, *Protein Pept. Lett.*, 9(5), 403-9.

### **Book chapters**

1. Divya Gopalakrishnan Nair, Hans Robert Kalbitzer and **Sunilkumar Puthenpurackal Narayanan** (2024), Multifaceted molecular targets of anti-Inflammatory agents from ayurvedic plants. In: Haridas, M., Abdulhameed, S., Francis, D., Kumar, S.S. (eds) *Drugs from Nature: Targets, Assay Systems and Leads*. Springer, Singapore, pp 205–229. [https://doi.org/10.1007/978-981-99-9183-9\\_9](https://doi.org/10.1007/978-981-99-9183-9_9)
2. Achuthan Shaji and **Sunilkumar Puthenpurackal Narayanan** (2024); NMR spectroscopic characterization of self-assembled peptide nano-materials (book chapter), *Smart Nanomaterials: synthesis, applications and future prospects*, Bentham Science Publishers (in press).
3. Divya Gopalakrishnan Nair and **Sunilkumar Puthenpurackal Narayanan** (2024), Self-assembly and Self-organization at the Nanoscale (book chapter), *Polymer Science, Nanomaterials and Beyond: Exploring the Interdisciplinary Frontiers of Materials Research*, Cambridge Scholars Publishers, UK (in press).

### **Papers presented in seminars /conferences**

1. Ajitha Ajikumar, Anakha K. P. and **Sunilkumar P. N.**, Amyloid fibril formation by the self-assembly of L-histidine might be the cause of histidinemia, GNR Centenary Symposium for Structural Biology, 21-22 February 2023, Department of Biotechnology, Cochin University of Science and Technology, Kerala, India (**Oral presentation**).
2. **Sunilkumar P. N.**, M. Spoerner, M. B. Erlach, J. Köhler, W. Kremer, O. Mayans and H.R. Kalbitzer; Activation of auto-inhibited twitchin kinase by compressive force - a high pressure NMR study. *8<sup>th</sup> International Meeting on Biomolecules under Pressure (IMBP2016)*, 15-17 February, 2016, TU Dortmund University, D-44227 Dortmund, Germany (**Oral presentation**).
3. M. Hofmann, L. Pils, B. Ertinger, A. Haag, O. Reiser, **S. P. Narayanan**, W. Kremer, H. R. Kalbitzer, C. R. Botines, O. I. Soler and R. M. Ortuno; Investigation of pressure effects on modular peptidic organocatalysts, *8<sup>th</sup> International Meeting on Biomolecules under Pressure (IMBP2016)*, 15-17 February, 2016, TU Dortmund University, D-44227 Dortmund, Germany (**Oral presentation**).
4. M. Spoerner, Pedro Lopes, **Sunilkumar P. Narayanan**, Ina Rosnizeck and H. R. Kalbitzer; Characterization of intrinsic conformational equilibria in Ras-like proteins by high pressure NMR: Identifying targets for novel signaling modulators, *8<sup>th</sup> International Meeting on Biomolecules under Pressure (IMBP2016)*, 15-17 February, 2016, TU Dortmund University, D-44227 Dortmund, Germany (**Oral presentation**).
5. Pedro Lopes, M. Spoerner, **Sunilkumar P. Narayanan**, Ina Rosnizeck, Andreas Huberth, Werner Kremer and H. R. Kalbitzer; Detecting the functional conformations of active Ras protein by high pressure NMR spectroscopy, *8<sup>th</sup> International Meeting on Biomolecules under Pressure (IMBP2016)*, 15-17 February, 2016, TU Dortmund University, D-44227 Dortmund, Germany (**Poster presentation**).
6. **Sunilkumar P. N.**, Divya G. Nair, W. Kremer, D. Schaal, M. B. Aguiar, S. Wenzel, S. Schwarzingen and H. R. Kalbitzer; Cavity size fluctuations induce conformational transitions in human prion protein- high pressure NMR and Xenon NMR studies, *7<sup>th</sup> International Meeting on Biomolecules under Pressure (IMBP2014)*, 8-11 July 2014, Montpellier, France (**Poster presentation**).
7. **Sunilkumar P. N.**, I. C. Rosnizeck, C. E. Munte, V. Kropf, M. Spoerner and H. R. Kalbitzer, High pressure NMR spectroscopy and drug development, *35<sup>th</sup> FGMR Discussion Meeting and joint Conference of the German, Italian and Solvanian Magnetic Resonance Societies*, 9-12 September 2013 in Frauenwörth on the island of Frauenchiemsee / Lake Chiemsee, Munich, Germany (**Poster presentation**).
8. K. Löffel, M. B. Erlach, A. Huberth, **Sunilkumar P. N.**, J. Köhler, M. Spoerner and H. R. Kalbitzer; Scanning the conformational space of inactive Ras by means of high pressure NMR, *35<sup>th</sup> FGMR Discussion Meeting and joint Conference of the German, Italian and Solvanian Magnetic Resonance Societies*, 9-12 September, 2013 in Frauenwörth on the island of Frauenchiemsee / Lake Chiemsee, Munich, Germany (**Poster presentation**).
9. **Sunilkumar P. N.**, A. Maeno, H. Matsuo, M. Oda, H. Morii and K. Akasaka; Extensively hydrated but folded – a novel state of globular proteins stabilized at high pressure and low

temperature, 6th International Meeting on Biomolecules under Pressure (IMBP 2011), 12–16 December 2011, Otsu City former Public Hall, Otsu, Shiga, Japan (**Oral presentation**).

10. S. Inaba, A. Maeno, **Sunilkumar P. N.**, H. Fukada, H. Matsuo, H. Morii, K. Akasaka, and M. Oda; Conformational fluctuations of c-Myb DNA-binding domain and its correlation with stability and function, 6<sup>th</sup> International Meeting on Biomolecules under Pressure (IMBP 2011), 12–16 December 2011, Otsu City former Public Hall, Otsu, Shiga, Japan (**Poster presentation**).
11. **Sunilkumar P. N.**, A. Maeno, H. Matsuo, M. Oda, H. Morii and K. Akasaka ; Extensively hydrated but folded – a novel state of globular proteins stabilized at high pressure and low temperature, *International Symposium on Nuclear Magnetic Resonance*, 15-18 Nov 2011, Yokohama, Japan (**Poster presentation**).
12. A. Maeno, **Sunilkumar P. N.**, H. Matsuo, E. Ohmae, C. Kato and K. Akasaka; High pressure NMR study of DHFR from deep-sea bacterium. *International Symposium on Nuclear Magnetic Resonance*, 15-18 Nov 2011, Yokohama, Japan (**Poster presentation**).
13. **Sunilkumar P. N.**, A. Maeno, M. Oda , H. Morii and K. Akasaka , An extensively hydrated and folded state found in c-Myb R2 sub-domain, *58<sup>th</sup> Annual Meeting of the Biochemical Society of Japan*, 21<sup>st</sup> May 2011, Kansai Medical University, Japan (**Oral presentation**).
14. **Sunilkumar P. N.** , A. Maeno, H. Matsuo, M. Oda, H. Morii and K. Akasaka, An extensively hydrated and folded conformer stabilized at high pressure and low temperature. The case of c-Myb R2 sub-domain. *The 49<sup>th</sup> Annual Meeting of the Biophysical Society of Japan*, 16-18 September 2011, University of Hyogo, Himeji, Japan (**Poster presentation**).
15. A. Maeno, R. Kitahara, Y.O. Kamatari, **Sunilkumar P. N.** and K. Akasaka, Cavity hydration and the dynamics of a protein, *The 49<sup>th</sup> Annual Meeting of the Biophysical Society of Japan*, 16-18 September 2011, Himeji, Japan (**Poster presentation**).
16. S. Inaba, H. Fukada, **Sunilkumar P. N.**, A. Maeno, H. Matsuo, H. Morii, K. Akasaka, and M. Oda, Conformational fluctuation of c-Myb DNA-binding domain analyzed by temperature and pressure perturbation experiments, *The 49<sup>th</sup> Annual Meeting of the Biophysical Society of Japan*, 16-18 September 2011, Himeji, Japan (**Poster presentation**).
17. **Sunilkumar P.N.**, A. Maeno, Y. Wada, S. Tate and K. Akasaka, Effect of loop mutation on protein dynamics - A high pressure NMR study of E.coli DHFR, *49<sup>th</sup> Annual Meetings of the NMR Society of Japan*, Tokyo, 15-17 Nov 2010 (**Poster presentation**).
18. **Sunilkumar P. N.**, A. Maeno, M. Oda , H. Morii and K. Akasaka; Effect of cavity on the overall and local stability of c-Myb R2 sub-domain, *The 48th Annual Meeting of the Biophysical Society of Japan (BSJ48)*, 20-22 September 2010, Tohoku University, Sendai, Japan (**Poster presentation**).
19. **Sunilkumar P. N.**, Abhilash J. and Haridas M., New anti-inflammatory agents from marine actinomycetes with two sequential targets – inference from docking studies, *Proceedings of the 21<sup>st</sup> Kerala Science Congress*, 28-31 January 2009, Kollam, Kerala (**Poster presentation**).
20. Abhilash J., **Sunilkumar P. N.** and Haridas M, Tasiamide: a novel probable anti-inflammatory agent from marine cyanobacteria, *Proceedings of the 21st Kerala Science Congress*, 28-31 January 2009, Kollam, Kerala (**Poster presentation**).

21. **Sunilkumar P. N.**, Sadasivan C. and Haridas M.; Role of K10 residue in maintaining the helical structure of SPF peptide: A molecular dynamics study, *20<sup>th</sup> Kerala Science Congress (Young Scientist Award contest)*, 28-31 January 2008, Thiruvananthapuram, Kerala (**Oral presentation**).
22. **Sunilkumar P. N.**, Devaky K. S. and Haridas M.; Synthesis, characterization and conformational analysis of SPF analogue peptides, *International Conference on Advances in Polymer Blends, Composites, IPNS and Gels: Macro to Nano Scales (ICBC 2005)*, 21-23 March 2005, School of Chemical Sciences, Mahatma Gandhi University, Kottayam, Kerala, India (**Poster presentation**).
23. **Sunilkumar P. N.**, Sadasivan C., Devaky K. S. and Haridas M.; Solution conformation of two peptides derived from bovine seminal plasmin (SPLN) protein by <sup>1</sup>H NMR and restrained molecular dynamics, *21<sup>st</sup> International Conference on Magnetic Resonance in Biological Systems (ICMRBS)*, 16-21 January 2005, Hyderabad, India (**Poster presentation**).
24. **Sunilkumar P. N.** and Haridas M., Solid phase synthesis and solution conformation of a hexapeptide, Glu-Thr-Phe-Leu-Ser-Glu, *Discussion Meeting on Structural Biology and Symposium on Biophysics*, 21-23 January 2002, Department of Crystallography and Biophysics, University of Madras, Under the aegis of Indian Biophysical Society (**Poster presentation**).

### **Workshops attended**

1. *Two day national workshop on patents and patent filing in biotechnology*, 24-25 April 2009, Department of Biotechnology & Microbiology, Kannur University, Kerala, India.
2. *National Workshop on Protein Modelling*, 21-23 Feb, 2004, School of Chemical Technology, SASTRA, Thanjavur, Tamilnadu, India.
3. *National Workshop on Bioinformatics*, 29 Sept.- 1 Oct. 2001, Department of Biotechnology, Dr. G. R. Damodaran College of Science, Coimbatore-14, Tamilnadu, India.

### **Seminar, symposia and workshops organized**

#### **On behalf of Magnetic Resonance Society Kerala**

1. National Seminar on NMR Spectroscopy, 29<sup>th</sup> & 30<sup>th</sup> November 2024, jointly organized by Magnetic Resonance Society Kerala and Department of Chemistry, Amrita Viswa Vidyapeetham, Kollam, Kerala, India.
2. National Seminar on NMR Spectroscopy, 16<sup>th</sup> & 17<sup>th</sup> August 2024, jointly organized by Magnetic Resonance Society Kerala and Department of Chemistry, St. Thomas College, Thrissur, Kerala, India.

3. National Seminar on NMR Spectroscopy, 17<sup>th</sup>-19<sup>th</sup> January 2024, jointly organized by Magnetic Resonance Society Kerala and Department of Chemistry, St. Michael's College, Cherthala, Kerala, India
4. National Seminar on NMR Spectroscopy, 20<sup>th</sup> and 21<sup>st</sup> October 2023 Jointly organized by Magnetic Resonance Society Kerala and Mar Athanasius College Kothamangalam, Kerala, India.
5. National Symposium on Magnetic Resonance, 23-25 June 2023, , Jointly organized by Magnetic Resonance Society Kerala and Government College Kottayam
6. National Seminar on NMR Spectroscopy, 4-5 November 2022, Jointly organized by Magnetic Resonance Society Kerala and Nirmalagiri College, Kuthuparamba
7. National workshop on NMR s Spectroscopy, 16-18 September 2022, Jointly organized by Magnetic Resonance Society Kerala and Srinivasan Institute for Basic Sciences, Pampady, Kerala, India.
8. National Seminar on NMR Spectroscopy, 22-23 April 2022, Jointly organized by Magnetic Resonance Society Kerala and St. Thomas College, Palai
9. Webinar on ESR Spectroscopy, 20-21 November 2021, Jointly organized by Magnetic Resonance Society Kerala and Srinivasan Institute for Basic Sciences, Pampady, Kerala, India.
10. Webinar on Magnetic Resonance, 20-23 May 2021, Jointly organized by Magnetic Resonance Society Kerala and Srinivasan Institute for Basic Sciences, Pampady, Kerala, India.

#### Others

11. Webinar on NMR: Theory, Instrumentation and Applications, 20-23 August 2020, Mahatma Gandhi University, Kottayam, Kerala & Kerala State Council for Science Technology and Environment (KSCSTE)
12. “National Symposium on Computational Biology” 23 - 25 January 2006. Kristu Jyoti College, Changanacherry, Kottayam, Kerala, India.