

# Faculty Profile

## Personal Details

**Name:** Dr. ANJU K NAIR  
**Department:** Physics  
**Designation:** Assistant Professor (On Contract)  
**Date of Joining:** 01-10-2018

**Educational Qualifications:** P.hD, M.Phil, M.Sc, B.Ed

## Research Interests

Nanomaterials for energy storage and sensing applications

## Honors and Awards

- **Best Paper Award for Young Scientist in Physics:** Kerala Science Congress organized by Kerala State Council for Science, Technology and Environment (KSCSTE) held at Government Brannan College, Thalassery, Kerala, India, January 28- 30, 2018.
- **Best Oral presentation award:** HEAM Scientist 2018-A national level meet on hydrogen energy and related advanced materials, Department of Chemistry, University of Kerala in association with Indian association for hydrogen and advanced materials, Bhopal, March 6, 2018.
- **Best Oral presentation award:** National Seminar on "Nanomedicine: Current Scenario and Future Opportunities", Department of Chemistry, S. N College, Chengannur, Kerala, February 17-18, 2017.
- **Best Oral presentation award:** International Meeting on Highly correlated Systems (IMHCS-2017), School of Pure and Applied Physics, and International and Inter University Centre for Nanoscience and Nanotechnology, Mahatma Gandhi University, Kottayam, Kerala, March 24-26, 2017.
- **Our Work Highlighted in Nature News:** Boron doped graphene wrapped silver nanowires as an efficient electrocatalyst for molecular oxygen reduction. *Sci. Rep.* 6, 37731 (2016): Graphene-based catalyst for fuel cells, <http://www.natureasia.com/en/nindia/article/10.1038/nindia.2017.5>

## Membership in Professional Organizations

SPIE

## Publications

1. In situ synthesis of Ag nanostructures (nanosphere, nanocube and nanowire) over boron doped graphene for enhanced SERS and enzyme free detection of hydrogen peroxide applications, **Anju K Nair**, Kala M S, Sabu Thomas, Subbiah Alwarappan and Nandakumar Kalarikkal, *Langmuir*, 34, 2018, 13603-13614. **Impact Factor- 3.789**
1. Multifunctional nitrogen sulfur co-doped reduced graphene oxide – Ag nano hybrids (sphere, cube and wire) for nonlinear optical and SERS applications, **Anju K Nair**, Bhavitha K B, Sreekanth Perumpilavil, Pranitha Sankar, Kala M S, Sabu Thomas and Nandakumar Kalarikkal, *Carbon*, 132, 2018, 380. **Impact Factor- 7.082**
2. Reduced graphene oxide wrapped Ag nanostructures for enhanced SERS activity, **Anju K Nair**, M. S Kala, Sabu Thomas and Nandakumar Kalarikkal, *AIP conference proceedings*, 1942, 2018, 050094.
3. Boron doped graphene wrapped silver nanowires as an efficient electrocatalyst for molecular oxygen reduction, **Anju K. Nair**, Vineesh Thazhe Veetil, Nandakumar Kalarikkal, Sabu Thomas, M. S. Kala, Veena Sahajwalla, Rakesh K. Joshi & Subbiah Alwarappan, *Scientific Reports*, 6, 2016, 37731. **Impact Factor- 4.122**
4. Nitrogen doped graphene/silver nanowire hybrids as an excellent anode material for lithium ion batteries, **Anju K. Nair**, Indu Elizabeth, and Gopukumar. S, Sabu Thomas, Kala M. S, Nandakumar Kalarikkal, *Applied Surface Science*, 428, 2018, 1199-1129. **Impact Factor- 4.439**
5. Interaction of Phospholipid with silver nanorods, **Anju K Nair**, S. Mahesh, and Nandakumar Kalarikkal, *AIP conference proceedings*, 132, 2014, 1576.
6. Multifunctional Ni-NiO-CNT composite as High performing free standing anode for Li ion batteries as advanced electrocatalyst for oxygen evolution reaction Indu Elizabeth, **Anju K Nair**, Bhanu Pratap Singh, Sukumaran Gopukumar, *Electrochimica acta*, 230, 2017, 98. **Impact Factor- 5.116**
7. Investigating solvent effects on aggregation behaviour, linear and nonlinear optical properties of silver nanoclusters, Bhavitha K.B, **Anju K Nair**, Sreekanth Perumbilavil, Kala M S, Abhijit Saha, R Aravinda Narayanan, Nishar Hameed, Sabu Thomas, Nandakumar Kalarikkal, *Optical Materials*, 73, , 2017, 695. **Impact Factor-2.320**
8. In-situ Dose dependent Gamma ray Irradiated Synthesis of PMMA-Ag nanocomposites films for multifunctional applications. Bhavitha K. B, **Anju K Nair**, Anshida Mayeen, Kala M. S, Sabu Thomas, Nandakumar Kalarikkal, *New Journal of Chemistry*, 19, 2018, 15750- 15761. **Impact Factor- 3.277**
9. Green synthesis of graphene oxide/Ag nanocomposites via laser ablation in water for SERS applications, Parvathy Nancy, Anju K Nair, Jemy James, Nandakumar Kalarikkal, *AIP Conference Proceedings*, 2100(1):020025

## Books

1. Plasma and Fusion Science From Fundamental Research to Technological Applications, B. Raneesh, Nandakumar Kalarikkal, Jemy James and **Anju K. Nair**, Apple Academic Press ISBN 9781771884532 - CAT # N11734.

## Book Chapters

1. Graphene based hybrids for energy storage and energy conversion applications, **Anju K Nair**, Kala M S, Sabu Thomas and Nandakumar Kalarikkal, Polymeric and Nanostructured Materials- Synthesis, Properties and Advanced Applications, Apple Academic Press, ISBN hard: 978-1-77188-644-4, 2018, 255-272
2. Optical Characterization of Nanomaterials, **Anju K Nair**, Layena Shaji, Anshida Mayeen, Kala M S, Sabu Thomas, Nandakumar Kalarikkal, Synthesis and Characterization of Nanomaterials: Advances and Key Technologies, Micro and Nanotechnologies Series, Elsevier, ISBN: 978-0-08-101973-3, 2018, 269-299.
3. Morphological Characterization of Nanomaterials, Anshida Mayeen, **Anju K Nair**, Layena Shaji, Kala M S, Sabu Thomas, Nandakumar Kalarikkal, Synthesis and Characterization of Nanomaterials: Advances and Key Technologies, Micro and Nanotechnologies Series, Elsevier, ISBN: 978-0-08-101973-3, 2018, 335-364.

## Paper Presentations in Seminars/Conferences Attended

1. **Reduced Graphene Oxide Wrapped Ag Nanostructures for Enhanced SERS Activity**, 62<sup>nd</sup> DAE Solid State Physics Symposium, Bhabha Atomic Research Centre, Mumbai, December 26-30, 2017.
2. **In-situ synthesis of Ag nanocubes, nanosphere and nanowire over boron doped graphene sheets for SERS applications**, International Conference on Photochemistry and its Applications, School of Environmental Science, Mahatma Gandhi University, Kottayam, Kerala, November 10-13, 2017.
3. **Doped graphenes/silver nanowire polystyrene free standing films for nonlinear optical limiting applications**, Malaysia Polymer International Conference 2017 (MPIC-2017), University Kebangsaan Malaysia, July 19-20, 2017.
4. **Multifunctional nitrogen sulphur co-doped reduced graphene oxide – Ag nano hybrids (sphere, cube and wire) for nonlinear optical and SERS applications**- International Meeting on Highly correlated Systems (IMHCS-2017), School of Pure and Applied Physics, and International and Inter University Centre for Nanoscience and Nanotechnology, Mahatma Gandhi University, Kottayam, Kerala, March 24-26, 2017.
5. **Ag/Au coreshell nanowires for high efficiency hydrogen peroxide sensing and surface enhanced Raman scattering applications**, National Seminar on "Nanomedicine:

Current Scenario And Future Opportunities", Department of chemistry, S. N College, Chengannur, Kerala, February 17-18, 2017.

6. **Boron doped graphene-silver nanowire hybrids for superior oxygen reduction reaction in fuel cells-** India International Science Festival (IISF-2016), organized by the Union Ministry of Science and Technology and Earth Sciences in association with Vijnana Bharati (VIBHA) at National Physical Laboratory, New Delhi, December 7-11, 2016.
7. **Noble metal nanostructures and heteroatom doped graphene hybrids for multifunctional applications**, National conference on Modern trends in research-2016, organized by St. Teresa's College, Ernakulum, December 16, 2017.
8. **Silver nanowire- Boron doped graphene hybrids for high electrocatalytic performance in the oxygen reduction reaction**, Fourth International Conference on Frontiers in Nanoscience and Technology (Cochin Nano-2016), Department of Physics, Cochin University of Science and Technology (CUSAT), February 20-23, 2016.
9. **Nanosecond and Femtosecond Optical power limiting of reduced graphene oxide-Ag nanowires'**, DAE-BRNS National Laser Symposium (NLS-25), KIIT University, Bhubaneswar, and December 20-23, 2016.
10. **Starch Capped Silver Nanoparticles as an LSPR-based Optical Sensor for Hydrogen Peroxide**, International Conference on Energy Harvesting Storage and Conversion (IC EEE -2015), Department of Physics, Cochin University of Science and Technology (CUSAT), February 5-7, 2015.
11. **Nanosecond and Femtosecond Optical power limiting of Ag nanowires**, DAE-BRNS National Laser Symposium (NLS-24), Raja Ramanna Centre for Advanced Technology, Indore (MP), December 2-5, 2015.
12. **Green mediated synthesis of silver nanoparticles by P-emblica extract**, National conference on recent trends in materials science and technology (NCMST- 2013), Department of chemistry, Indian Institute of Space Science and Technology, July 10-12, 2013.
13. **Interaction of Phospholipid with Silver Nanorods**, 2nd International conference on Optoelectronic Materials and Thin films for Advanced Technology (OMTAT-2013), Department of Physics, Cochin University of Science and Technology (CUSAT), January 2-3, 2013.