**Curriculum vitae**

**Dr. ATHIRA K. V. RAJ**

**Mobile:** +91- 9847865483

**E-Mail:** athirakvraj2010@gmail.com

**Objective**

Looking forward to an academic/ scientific career in a progressive organization where I can apply my technical and experimental knowledge, acquire new skills and be a part of the team that works dynamically towards the growth of the organization.

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| **Research Interests** |

* Novel luminescent materials for energy saving applications
* Pyrochlore, Fluorite and C-type host materials for white light emitting diode applications
* Thermochromic and camouflage inorganic pigments for defence applications

**Educational Qualifications**

* **SSLC ( 10th ) 80.0% 2004**

Manarul Hudha English Medium H.S.S Nedumangad, Thiruvananthapuram.

* **HSC ( 12th)** **72.0% 2006**

S.N.V.H.S.S, Anad

Nedumangad, Thiruvananthapuram.

* **B.Sc Physics Kerala University 80.0% 2009**

Govt. Women’s College Thiruvananthapuram.

**M.Sc Physics Kerala University 73.0% 2011**

University of Kerala

Thiruvananthapuram

* **M.Phil Physics Kerala University A Grade 2013**

University of Kerala

Thiruvananthapuram

* **Diploma in Computer Application Govt. of Kerala 84.4% 2013**

C-DIT, Thiruvananthapuram

* **Ph.D Physics Kerala University 2019**

CSIR-NIIST, Thiruvananthapuram

* **Title of Ph.D Thesis**: Synthesis and Optical Properties of Europium and Terbium doped

Cerium Based Oxides.

**Technical Skills**

* PANalytical X’pert Pro diffractometer (X-ray Diffractometer)
* PHI 5000 Versa probe II X-ray photoelectron Spectroscopy (XPS)
* Sample Preparation for High resolution transmission electron microscopy (HRTEM) using TECNAI 30G2 S-TWIN
* JEOL scanning electron microscope (model JSM-5600 LV)
* X-ray microchemical analysis and elemental mapping using a Silicon Drift Detector–XMaxN attached with a Carl Zeiss EVO SEM
* Spex-Fluorolog DM3000F spectrofluorimeter
* Luminescence life time by the phosphorimeter attached to Fluorolog®3 spectrofluorimeter
* UV-Vis-NIR Spectrometer (Shimadzu, UV-3600 spectrometer)
* CIE1976 *L\*a\*b\** colorimetric method by the Commission Internationale de l’Eclairage (CIE)
* Thermo gravimetric/differential thermal analysis (TG/DTA) 6200  Planetary ball mill- (Vibronics, 250W, India)

**Software Skills**

* Origin, Excel, Peak fit
* XRD refinement software – Rietveld refinement expert high score plus
* XPS- Multipak Software for Peak Fitting
* CIE Software for colorimetric analysis
* Quantum Yield Software
* Diamond Software
* Highly skilled in programming languages like C, C++.

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| **Publications** |

1. **Athira K. V. Raj**, P. Prabhakar Rao, Intense Blue Chromophores in Cobalt Doped Phenacite-Type Zinc Germanate System through Jahn-Teller Distortion of Co Tetrahedron, ***Chemistryselect*** 2021, 6, 11344-11351

1. **Athira K. V. Raj**, P. Prabhakar Rao, and T. S. Sreena, Control of defect formation and ordering in Eu3+ doped RE2Ce2O7 (RE = La, Y, and Gd) red phosphor, ***Journal of Applied Physics*** 2020, 127, 243102.

1. **Athira K. V. Raj**, P. Prabhakar Rao and Sreena T. S, Color Tunable Pigments with high NIR reflectance in Terbium doped Cerate systems for Sustainable Energy Saving Applications, ***ACS Sustainable Chemistry and Engineering*** 2019, 7, 8804−8815.

1. **Athira K. V. Raj**, P. Prabhakar Rao, Sreena T. S, Aju Thara T. R, Pigmentary Colors from yellow to red in Bi2Ce2O7 by rare earth ion substitutions as possible high NIR reflecting pigments, ***Dyes and Pigments*** 2019, 160, 177-187.

1. **Athira K. V. Raj**, P. Prabhakar Rao, Sreena T. S, Aju Thara T. R, Broad greenish-yellow luminescence in CaMoO4 by Si4+ acceptor doping as potential phosphors for white light emitting diode applications, ***Journal of Materials Science: Materials in Electronics***, 2018, 19, 16647-16653.

1. **Athira K V Raj**, P. Prabhakar Rao, Sreena T S, Aju Thara T R, Influence of local structure on photoluminescence properties of Eu3+ doped CeO2 red phosphors through induced oxygen vacancies by contrasting rare earth substitutions, ***Physical Chemistry Chemical Physics*** 2017, 19, 20110.

1. **Athira K V Raj**, P. Prabhakar Rao, Divya S, Aju Thara T R, Terbium doped Sr2MO4 [M = Sn and Zr] yellow pigments with high infrared reflectance for energy saving applications, ***Powder Technology*** 2017, 311, 52-58.

1. **Athira K V Raj**, P. Prabhakar Rao, Sameera S, Divya S, Ajithara T R, Sreena T S and Aiswarya K, High IR Reflecting Yellow Colorants in Yttrium-doped MgBi2-xO4 Solid Solutions, ***Chemistry Letters*** 2016, 45, 928-930.

1. **Athira K V Raj**, P. Prabhakar Rao, Sameera S and Divya S, Pigments Based on Terbiumdoped Yttrium Cerate with high NIR Reflectance for Cool Roof and Surface Coating Applications, ***Dyes and Pigments*** 2015, 122, 116-125.

1. **Athira K. V. Raj**, P. Prabhakar Rao, T. S. Sreena, S. Sameera, Vineetha James and U. A. Renju, Remarkable changes in the photoluminescent properties of Y2Ce2O7:Eu3+ red phosphors through modification of the cerium oxidation states and oxygen vacancy ordering, ***Physical Chemistry Chemical Physics*** 2014, 16, 23699-23710.

1. **Athira K. V. Raj**, P. Prabhakar Rao, S. Sameera, Vineetha James, and S. Divya, Synthesis of Novel Nontoxic Yellow Pigments: Sr2Ce1-xTbxO4, ***Chemistry Letters*** 2014, 43, 985-987.

1. T.S.Sreena, **Athira K.V.Raj,** P. PrabhakarRao, Effects of charge transfer band position and intensity on the photoluminescence properties of Ca1.9M2O7:0.1Eu3+ (M = Nb, Sb and Ta). ***Solid State Sciences***, 2022, 123, 106783.

1. B. A. Aswathy, P. Prabhakar Rao, V. G. Suchithra , **Athira K. V. Raj,** New narrow orangeemitting phosphors in 1:2 B-site cation ordered Eu3+ doped triple perovskite

Ba3CaNb2O9, ***Journal of Materials Science: Materials in Electronics***, 2021 32, 12671– 12680.

1. T. S. Sreena, P. Prabhakar Rao, T. R. Aju Thara, **Athira K. V. Raj,** New lanthanide‐free self‐activated full‐color emission phosphor in Y3+ doped Sr3Bi(VO4)3 system for white light emitting diode applications, Luminescence: the Journal of Biological and Chemical Luminescence 2021, 36, 819-825.

1. T. S. Sreena, P. Prabhakar Rao, Athira K. V. Raj & T. R. Aju Thara, Strong narrow red emission in a perturbed fergusonite system: Y3Mg2 Nb3O14: Eu3+ for white LED applications, ***Journal of Electronic Materials***, 2020, 49, 2332–2342.
2. Sreena T S, P. Prabhakar Rao, **Athira K V Raj** and T. R. Aju Thara, Role of electronegativity on the crystal field splitting of Eu3þ manifold in pyrochlore-type oxides, Ca3M3Nb2O14, ***Journal of Solid State Chemistry,*** 2019, 278, 120895.

1. Aju Thara T R, P. Prabhakar Rao, **Athira K V Raj** and Sreena T S, New series of brilliant yellow colorants in rare earth doped scheelite type oxides, (LiRE)1/2WO4- BiVO4 for cool roof applications, **Solar Energy Materials and Solar Cells,** 2019, 200,110015.

1. Sreena T S, P. Prabhakar Rao, **Athira K V Raj** and T. R. Aju Thara, Exploitation of Eu3+ red luminescence through order-disorder structural transition in lanthanide stannate pyrochlore for warm white LED applications, ***Physical Chemistry Chemical Physics*** 201820 24287-24299.
2. Sreena T S, P. Prabhakar Rao, **Athira K. V. Raj** and Ajuthara T R, Narrow-band redemitting phosphors, Gd3Zn2Nb3O14 :Eu3+ with high color purity for phosphor-converted white light emitting diodes, ***Journal of Alloys and Compound***s 2018 751 148-158

1. Sreena T S, P. Prabhakar Rao, Ajmal K N and **Athira K V Raj,** Influence of morphology on luminescence properties of xenotime type phosphors NaYP2O7:Eu3+ synthesized via solid state and citrate gel routes, ***Journal of Materials Science: Materials in Electronics***, 2018 29 7458–7467

1. Divya S, P. Prabhakar Rao, **Athira K V Raj** and Ajuthara T R, Intense Blue Colors in Wolframite‐Type Co2+:MgWO4 Oxides Through Distortion in Co2+ Octahedra, ***Chemistry Select*** 2018, 410-417.

1. Sameera S, P. Prabhakar Rao, Divya S, **Athira K V Raj** and Ajuthara T R,High IR reflecting BiVO4-CaMoO4 based yellow pigments for cool roof applications, ***Energy and Buildings*** 2017 154 491-498.

1. Reshmi V R, P. Prabhakar Rao, **Athira K V Raj** and Sreena T S, Novel molybdenum based pyrochlore type red phosphors, NaGd1−xSnMoO7: *x*Eu3+ under near UV and blue excitation, ***Journal of Luminescence*** 2017 190 6–9.

1. Aju Thara T R, P. Prabhakar Rao, Divya S, **Athira K V Raj** and Sreena T S, Enhanced NIR Reflectance with Brilliant Yellow Hues in Scheelite type Solid Solutions, (LiLaZn)1/3MoO4 - BiVO4 for Energy Saving Products, ***ACS Sustainable Chemistry and Engineering*** 2017, 5, 5118−5126.

1. Divya S, P. Prabhakar Rao, **Athira K V Raj** and Ajuthara T R, Enhanced pigmentary properties of rare earth germanates of the type La2CuGe2O8 through CuO6 octahedron distortion, ***Dyes and Pigments*** 2017142 472-480.

1. Divya S, P. Prabhakar Rao, Sameera S and **Athira K V Raj,** Influence of aliovalent cation substitutions on the optical properties of In2Cu2O5 system, ***Dyes and Pigments*** 2016 134 506-515.

1. Sreena T S, P. Prabhakar Rao, Linda Francis, **Athira K V Raj**, Influence of Structural Disorder on the Photoluminescence Properties of Eu3+ Doped Red Phosphors: Ca2Y3*x*Nb3O14: *x*Eu3+, ***Chemistry Select*** 201613 3413-3422.

1. Sameera S, P. Prabhakar Rao, Divya S, **Athira K V Raj,** Brilliant IR Reflecting Yellow Colorants in Rare Earth Double Molybdate Substituted BiVO4 Solid Solutions for Energy Saving Applications, ***ACS Sustainable Chemistry and Engineering*** 20153 1227−1233.

1. Sreena T S, P. Prabhakar Rao, Linda Francis, **Athira K V Raj**, Parvathi S Babu, [Structural](https://www.researchgate.net/publication/274461295_Structural_and_Photoluminescence_Properties_of_Stannate_based_Displaced_Pyrochlore-type_Red_Phosphors_Ca3-xSn3Nb2O14_xEu3?ev=prf_pub) and Photoluminescence Properties of Stannate based Displaced Pyrochlor[e-](https://www.researchgate.net/publication/274461295_Structural_and_Photoluminescence_Properties_of_Stannate_based_Displaced_Pyrochlore-type_Red_Phosphors_Ca3-xSn3Nb2O14_xEu3?ev=prf_pub)type Red [Phosphors: Ca3-xSn3Nb2O14: *x*Eu3+,](https://www.researchgate.net/publication/274461295_Structural_and_Photoluminescence_Properties_of_Stannate_based_Displaced_Pyrochlore-type_Red_Phosphors_Ca3-xSn3Nb2O14_xEu3?ev=prf_pub) ***Dalton Transactions*** 2015 44 8718-8728.

1. Divya S, P. Prabhakar Rao, Sameera S, Vineetha James, **Athira K V Raj**, [Monoclinic LaGa1xMnxGe2O7](https://www.researchgate.net/publication/273523843_Monoclinic_LaGa1-xMnxGe2O7_A_New_Blue_Chromophore_Based_on_Mn3_in_Trigonal_Bipyramidal_Coordination_with_Longer_Apical_Bond_Lengths?ev=prf_pub): A New Blue Chromophore Based on M[n3+](https://www.researchgate.net/publication/273523843_Monoclinic_LaGa1-xMnxGe2O7_A_New_Blue_Chromophore_Based_on_Mn3_in_Trigonal_Bipyramidal_Coordination_with_Longer_Apical_Bond_Lengths?ev=prf_pub) in Trigonal Bipyramidal [Coordination with Longer Apical Bond Lengths,](https://www.researchgate.net/publication/273523843_Monoclinic_LaGa1-xMnxGe2O7_A_New_Blue_Chromophore_Based_on_Mn3_in_Trigonal_Bipyramidal_Coordination_with_Longer_Apical_Bond_Lengths?ev=prf_pub) ***RSC Advances*** 2015 5 27278-27281.

1. Sameera Saithathul Fathima[h,](http://pubs.rsc.org/en/results?searchtext=Author%3ASameera%20Saithathul%20Fathimah)  Padala Prabhakar Ra[o**,**](http://pubs.rsc.org/en/results?searchtext=Author%3APadala%20Prabhakar%20Rao)Vineetha Jame[s**,**](http://pubs.rsc.org/en/results?searchtext=Author%3AVineetha%20James) **Athira K. V.** [**Raj,**](http://pubs.rsc.org/en/results?searchtext=Author%3AAthira%20K.%20V.%20Raj) G. R. Chitradev[i](http://pubs.rsc.org/en/results?searchtext=Author%3AG.%20R.%20Chitradevi) andSandhyakumari Leel[a,](http://pubs.rsc.org/en/results?searchtext=Author%3ASandhyakumari%20Leela) Probing structural variation and multifunctionality in niobium doped bismuth vanadate materials, ***Dalton Transactions*** 2014 43 15851-15860.

1. S. Sameera, P. Prabhakar Rao, Vineetha James, S. Divya, **Athira K.V. Raj**, Influence of (LiLa)1/2MoO4 substitution on the pigmentary properties of BiVO4 , ***Dyes and Pigments*** 2014 104 41-47.

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| **Conference Papers** |

* 1. **Athira K V Raj,** P. Prabhakar Rao and Sreena T S, Pigmentary Colors from yellow to red in Bi2Ce2O7 by rare earth ion substitutions as possible high NIR reflecting pigments, National Conference on Emerging Trends in Science, Technology & Application of Electron Microscopy (STEAM 2018) at CSIR-NIIST, Trivandrum during December 1921, 2018.

* 1. **Athira K V Raj,** P. Prabhakar Rao, Sreena T S and Aju Thara T. R, Enhanced photoluminescence properties of Eu3+ doped A2Ce2O7 (A = La, Y and Gd) red phosphor, International conference on Science, Technology and Applications of Rare Earths (ICSTAR) 2018 at Tirupati during September 23-25 2018 **(Best Poster Award).**

* 1. **Athira K V Raj**, P Prabhakar Rao\*, Sreena T. S, Ajuthara T R and Bradha M, Influence of local structure on photoluminescence properties of Eu3+ doped CeO2 red phosphors through induced oxygen vacancies, *National Conference on Luminescence and its Applications (NCLA) 2018* at CSIR-NIIST, Trivndrum.

* 1. **Athira K. V. Raj**, P. Prabhakar Rao, T. S. Sreena, Local Structure Correlation in Eu3+ Doped Ln2Ce2O7 (Ln = La, Gd, Y and Lu) Red Phosphors and the Role of Ln Ionic Radius, Eu3+Concentration and Oxygen Vacancies, *National Conference on Luminescence and Applications [NCLA-2016]*, held at RTM Nagpur University, Nagpur **(Best Oral Presentation Award)**.

* 1. **Athira K. V. Raj**, P. Prabhakar Rao\*, Sreena T S and Parvathi S Babu, Enhanced photoluminescence in Y2Ce2O7 through oxygen vacancy ordering and the modification in cerium oxidation states, *National Seminar on Photonics and its Applications (NSPA2015)****,*** held at University of Kerala **(Best Oral Presentation Award)**.

* 1. **Athira K. V. Raj**, P. Prabhakar Rao\*, S. Sameera and Divya S, Synthesis of Terbium doped yttrium cerate red pigments with high NIR reflectance for cool roof and surface coating applications, *International Conference on science, Technology and Applications of Rare Earths (ICSTAR) 2015*, held at Kovalam Thiruvananthapuram Kerala.

* 1. **Athira K. V. Raj**, P. Prabhakar Rao\*, Mahesh S K, Linda Francis, Sreena T S and Parvathi S Babu Enhanced photoluminescence in CeO2 by Y2O3 addition through oxygen vacancy ordering and the modification in cerium oxidation, *International Conference on Luminescence and its Applications (ICLA) 2015,* held at PES University Bangalore.

* 1. **Athira K. V. Raj**, P. Prabhakar Rao\*, S. Sameera, Sreena T S**,** Vineetha James and S. Divya.Synthesis of Sr2M0.6Tb0.4O4 (M = Ce, Zr, Sn and Si) as yellow pigments for coloration of plastics, *(ISAS) 2014,* held at Kochi.

* 1. **Athira K. V. Raj**, P. Prabhakar Rao\*, Mahesh S K, Linda Francis, Reshmi V R and Sreena T S**,** Effect of Si substitution on the luminescence properties of Ce0.85O2:0.15Eu3+ phosphors prepared by citrate method, *International Conference on Advanced Functional Materials (ICAFM)2014*, held at Thiruvananthapuram.

* 1. Sreena T S, P. Prabhakar Rao and **Athira K V Raj,** Influence of Morphology on the Photoluminescence Properties of Eu3+ Doped Pyrochlore Red Phosphors for WLED Applications, National Conference on Emerging Trends in Science, Technology & Application of Electron Microscopy (STEAM 2018) at CSIR-NIIST, Trivandrum during December 19-21, 2018.

* 1. Sreena T S, P. Prabhakar Rao, **Athira K V Raj** and Aju Thara T. R, Exploitation of Eu3+ red luminescence through structural transition in lanthanide stannate pyrochlore for warm white led applications, International conference on Science, Technology and Applications of Rare Earths (ICSTAR) 2018 at Tirupati.

* 1. Aju Thara T. R, P. Prabhakar Rao, **Athira K V Raj** and Sreena T S, Synthesis and Characterisation of eco-friendly yellow pigments based on (LiLa)1/2WO4-BiVO4 for energy saving applications, International conference on Science, Technology and Applications of Rare Earths (ICSTAR) 2018 at Tirupati.

* 1. Sreena T S, P. Prabhakar Rao, **Athira K V Raj** and Aju Thara T. R, Development of Eu3+ doped narrow band red emitting phosphor for phosphor-converted white light emitting diodes, National Conference on Luminescence and its Applications (NCLA 2018) at CSIR-NIIST Trivandrum.

* 1. Aju Thara T. R, P. Prabhakar Rao, **Athira K V Raj**, Sreena T S, and M Bradha, Novel self activated full color emission phosphor in Y3+ doped Sr3Bi(VO)4 system: synthesis and luminescence properties, National Conference on Luminescence and its Applications (NCLA 2018) at CSIR-NIIST Trivandrum.

* 1. Sreena T S, P. Prabhakar Rao, **Athira K. V. Raj** and Parvathy S. Babu, Structural and

Photoluminescence Properties of Eu3+ Doped Pyrochlore Type Red Phosphors Ca3Ti3Nb2O14 for WLED Applications, National Conference on Luminescence and Applications [NCLA-2016], held at RTM Nagpur University, Nagpur.

* 1. Sreena T S, P. Prabhakar Rao, Linda Francis, **Athira K. V. Raj** and Parvathy S. Babu. Synthesis and characterisation of Eu3+ doped pyrochlore–type red phosphors

CaSn3M2O14 (M = Nb, Sb and Ta) for white light emitting diode applications, National Seminar on Photonics and its Applications (NSPA-2015), held at Dept. of

Optoelectronics University of Kerala.

* 1. Sameera S, P. Prabhakar Rao, Divya S and **Athira K.V Raj**, Methods for improving BiVO4 based pigments for NIR reflecting colorants, International Conference on science, Technology and Applications of Rare Earths (ICSTAR) 2015, held at Kovalam Thiruvananthapuram.

* 1. Sreena T S, P. Prabhakar Rao, Linda Francis, **Athira K. V. Raj** and Parvathy S. Babu. Synthesis and characterisation of Eu3+ doped pyrochlore–type red phosphors CaSn3M2O14 (M = Nb, Sb and Ta) for white light emitting diode applications, International Conference on science, Technology and Applications of Rare Earths (ICSTAR) 2015, held at Kovalam Thiruvananthapuram.

* 1. Sreena T S, P. Prabhakar Rao, Mahesh S K, Linda Francis, **Athira K. V. Raj** and Parvathy S. Babu, Studies on the photoluminescence properties of CaMoO4: 0.2 Eu3+ red phosphors by the addition of SmPO4, International Conference on Luminescence and its Applications (ICLA) 2015, held at PES University Bangalore.

* 1. Mahesh S.K, P. Prabhakar Rao, Linda Francis T, Sreena T.S, **Athira K. V. Raj**, Parvathi S Babu and Peter Koshy, Eu3+ doped Intense Red Emitting Fergusonite phosphor for pc—WLED applications, International Conference on Luminescence and its Applications (ICLA) 2015, held at PES University Bangalore.

* 1. Mahesh S.K, P. Prabhakar Rao, Linda Francis T, Sreena T.S, **Athira K. V. Raj**, Parvathi S Babu and Peter Koshy, Enhanced Red Luminescence in Eu3+ -ion activated Quaternary pyrochlore oxides through compositional modifications, International Conference on Luminescence and its Applications (ICLA) 2015, held at PES University Bangalore.

* 1. Sreena T S, P. Prabhakar Rao, **Athira K. V. Raj**, Mahesh S K, Linda Francis, Reshmi V R and Parvathy S. Babu, Photoluminesce of pyrochlore type red emitting phosphors, (ISAS) 2014, held at Kochi.

* 1. Sameera S, P. Prabhakar Rao, Vineetha James, **Athira K.V Raj**, Divya, Ecological IR reflecting pigments in (BiV)x(CaMo)1-xO4 for cool roof applications, (ISAS) 2014, held at Kochi.

* 1. Sreena T S, P. Prabhakar Rao, Mahesh S K, Linda Francis, Reshmi V R and **Athira K. V. Raj**, Synthesis and characterization of stannate based pyrochlore red emitting phosphors for white light emitting diodes, International Conference on Advanced Functional Materials (ICAFM) 2014.

* 1. Linda Francis T, P. Prabhakar Rao, Mahesh S.K, Reshmi V. R, Sreena T.S, **Athira K. V. Raj**, Photoluminescence properties and the structural studies of Eu3+ doped Gd3MO7 (M = Nb, Sb, Ta), International Conference on Advanced Functional Materials (ICAFM) 2014.

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| **SEMINARS AND WORKSHOPS** |

1. Participated in the International Conference on Advanced Materials and Manufacturing Processes for Strategic Sectors (ICAMPS 2018) at Thiruvananthapuram during 25-27 October 2018.
2. Participated in the National Workshop on “Advanced Materials Characterization Techniques” conducted by the Indian Instituted of Metals, Trivandrum Chapter during 910 August, 2017.
3. Attended NANO India 2013 at the National Institute for Interdisciplinary Science and

Technology (CSIR-NIIST), Thiruvananthapuram during February 19-20, 2013

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| **Awards** |

* + Best Poster Presentation Award at International Conference on on Science, Technology and Applications of Rare Earths (ICSTAR) 2018, held at Tirupati.

* + Best Oral Presentation Award at *National Conference on Luminescence and Applications [NCLA-2016]*, held at RTM Nagpur University, Nagpur.

* + Best Oral Presentation Award at *National Seminar on Photonics and its Applications (NSPA-2015)****,*** held at University of Kerala.

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| **Memberships** |

* + Academy of Microscopy Science and Technology (AMST), India.

**Personal Profile**

* + Father’s Name : Mr. VIJAYARAJ V M
  + Mother’s Name : Mrs. KUMARIUSHA T
  + Husband Name : Dr. SINGURU RAMANA
  + Date of Birth : 24-06-1988
  + Gender : Female
  + Nationality : Indian
  + Languages Known : Malayalam, English and Hindi
  + Permanent Address : Madhava Mandhiram,Vellarikonam

Iriyanadu, Panavoor P.O,

Nedumangadu, Thiruvananthapuram. Kerala – 695568

**Reference**

**Dr. P. Prabhakar Rao**

Chief Scientist & Former Head

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| **Declaration** |

I **Athira K. V. Raj** hereby confirm that the information given above is true to the best of my knowledge

**Place:** Trivandrum **(ATHIRA K. V. RAJ)**

**Date:** 05.05.2022