

B BAGYALAKSHMI

Curriculum Vitae

Assistant Professor (T)
Department of Physics
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Education

- 2013–2019 **PhD, (Doctor of Philosophy) in Physics**, Manonmaniam Sundaranar University, Tirunelveli, Tamil Nadu.
Title: Electric field induced structural investigation of lead-free ferroelectrics and converse magnetoelectric effect in FM/FE heterostructure
- 2010–2011 **M.Phil. (Master of Philosophy) in Physics**, Manonmaniam Sundaranar University, Tirunelveli, Tamil Nadu.
- 2008–2010 **M.Sc. (Master of Science) in Physics**, Manonmaniam Sundaranar University, Tirunelveli, Tamil Nadu.
- 2005–2008 **B.Sc. (Bachelor of Science) in Physics**, Sarah Tucker College (Autonomous), Tirunelveli, Tamil Nadu.

Employment Details

- 2024– Present **Assistant Professor (T)**, Department of Physics, Manonmaniam Sundaranar University, Tirunelveli, Tamil Nadu.
- 2018– 2023 **Assistant Professor (T)**, Department of Physics, Manonmaniam Sundaranar University, Tirunelveli, Tamil Nadu.
- 2013–2016 **Project Fellow in UGC-DAE CSR major research project entitled “Electric field control of magnetization in FM/FE hybrid structure**, Department of Physics, Manonmaniam Sundaranar University, Tirunelveli, Tamil Nadu.
- 2011– 2013 **Assistant Professor in Physics**, Thamirabharani Engineering College, Tirunelveli, Tamil Nadu.

Research Interests

Ferroelectrics, Piezoelectric energy storage devices, Artificial Magneto-electric materials, Multiferroics, and Green nano materials.

Research Skills

- Experimental Methods Solid-state reaction, Sol-gel, Spin-coating, Molten-salt synthesis, Templated grain growth.
- Materials Pb-free piezoelectric perovskite ceramics, Bismuth layer structured ferroelectric ceramics (BLSF), FM/FE heterostructure & multiferroic materials.
- Software ICDD-JCPDS (Structural Analysis), JANA2020 (Rietveld Analysis), Microcal Origin (Graphical), VESTA (Crystallographic package), ZsimpWin, L^AT_EX (Writing), Quantum Espresso, NI LabVIEW.
- Instruments Handling XRD (PANalytical X'pert Pro, Netherlands), High temperature furnaces (>1600°C) (MTI Inc., USA), Piezometer (APC International, USA), P-E loop tracer (Radiant Technologies Inc., USA), Electrochemical workstation (CHI604E, USA), High voltage power supply (5 kV D.C., APLAB, India), Home-built poling unit, Spin coater.

Designing Tools Home-built poling unit, Substrate holder for home-made spin coating unit, Home-built roller mill.

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Impact Factor Cumulative: 44.9, Average: 3.453.

Index h-index: 7, i-10 index: 6, Citations: 165.

Other Activities No. of M.Sc projects guided – 21, e-content developed – 2, FDP completed – 2.

Publications

- 2024 Palani Muthu K, **Bagyalakshmi B**, Vishaul T.P, Ram Mohan T.V, Veera Gajendra Babu M, *Experimental and first-principles investigation of structural, electronic, optical, elastic and ferroelectric properties of BaTiO₃*, Physica B: Condensed Matter, 674, 415548.
(I.F.: 2.8, Citation: 4)
- 2019 P. Esther Rubavathi, L. Venkidu, M. Veera Gajendra Babu, R. Venkat Raman, **Bagyalakshmi B**, S. M. Abdul Kader, K. Baskar, M. Muneeswaran, N. V. Giridharan, B. Sundarakannan, *Structure, Morphology and Magnetodielectric investigations of BaTi_{1-x}Fe_xO_{3δ} ceramics*, Journal of Materials Science: Materials in Electronics, 30, 5706.
(I.F.: 2.8, Citation: 22)
- 2019 P. Esther Rubavathi, M. Veera Gajendra Babu, **Bagyalakshmi B**, L. Venkidu, D. Dhayanithi, N. V. Giridharan, B. Sundarakannan, *Impact of Ba/Ti ratio on the magnetic properties of BaTiO₃ ceramics*, Vacuum, 159, 374.
(I.F.: 3.8, Citation: 29)
- 2018 M. Veera Gajendra Babu, **Bagyalakshmi B**, B. Sundarakannan, *Coexistence of ferroelectric phases and electric field induced structural transformation in sodium potassium bismuth titanate ceramics*, Journal of Applied Physics, 123, 234101.
(I.F.: 2.7, Citation: 4)
- 2018 **Bagyalakshmi B**, M. Veera Gajendra Babu, N. Lakshminarasimhan, B. Sundarakannan, *Temperature induced strain mediated magnetoelectric coupling in NiFe₂O₄/BaTiO₃ heterostructure*, Ceramics International, 44, 15099-15103.
(I.F.: 5.1, Citation: 8)
- 2018 L. Venkidu, M. Veera Gajendra Babu, P. Esther Rubavathi, **Bagyalakshmi B**, B. Sundarakannan, *Structure, microstructure, magnetic and magnetodielectric investigations on BaTi_{(1-x)y}Fe_xNb_yO₃ ceramics*, Ceramics International, 44, 8161-8165.
(I.F.: 2.1, Citation: 7)
- 2017 M. Veera Gajendra Babu, **Bagyalakshmi B**, B. Sundarakannan, *Structural analysis and electrical properties of K⁺, Bi³⁺ compensated (1-x)Na_{0.5}Bi_{0.5}TiO₃xK_{0.5}Bi_{0.5}TiO₃ ceramics*, Journal of Materials Science: Materials in Electronics, 28, 18620-18629.
(I.F.: 2.8)
- 2017 S. M. Abdul Kader, D. E. Jain Ruth, M. Veera Gajendra Babu, **Bagyalakshmi B**, B. Sundarakannan, *Significant enhancement in magnetization value of the K-doped 0.75BiFeO₃ 0.25BaTiO₃ lead-free multiferroics*, Materials Letters, 190, 270-272.
(I.F.: 2.7, Citation: 4)
- 2017 M. Veera Gajendra Babu, **Bagyalakshmi B**, D. Pathinettam Padiyan, Y. Ren, B. Sundarakannan, *Grain size induced monoclinic (Cm) to rhombohedral (R3c) transformation in sodium potassium bismuth titanate ceramics*, Scripta Materialia, 141, 67-71.
(I.F.: 5.3)

- 2017 M. Veera Gajendra Babu, **Bagyalakshmi B**, L. Venkidu, B. Sundarakannan, *Grain size effect on structure and electrical properties of $\text{Na}_{0.4}\text{K}_{0.1}\text{Bi}_{0.5}\text{TiO}_3$ ceramics*, Ceramics International, 43, 12599-12604.
(I.F.: 5.1, Citation: 30)
- 2016 **Bagyalakshmi B**, M. Veera Gajendra Babu, B. Sundarakannan, S. Kalavathi, V. Sridharan, G. Amarendra, *Converse magnetoelectric effect in $\text{NiFe}_2\text{O}_4/\text{BaTiO}_3$ heterostructure by electric field induced inter-ferroelectric phase transition*, Materials Letters, 170, 48-52.
(I.F.: 2.7, Citation: 13)
- 2015 D. E. Jain Ruth, M. Veera Gajendra Babu, S. M. Abdul Kader, **Bagyalakshmi B**, D. Pathinettam Padiyan, B. Sundarakannan, *Role of rubidium cation substitution in the A-site of sodium bismuth titanate ceramics*, Journal of Materials Science: Materials in Electronics, 26, 6757-6761.
(I.F.: 2.8, Citation: 5)
- 2015 M. Sharmila, S. M. Abdul Kader, D. E. Jain Ruth, M. Veera Gajendra Babu, **Bagyalakshmi B**, R. T. Ananth Kumar, D. Pathinettam Padiyan, B. Sundarakannan, *Effect of cobalt substitution on the optical properties of bismuth ferrite thin films*, Materials Science in Semiconductor Processing, 34, 109-113.
(I.F.: 4.2, Citation: 28)

Publications in Conference/Workshop/Symposium

International Conferences

- 2024 T. Muruges, T.V. Ram Mohan, S. Sasikumar, M. Veera Gajendra Babu, **B. Bagyalakshmi**, *Enhancing Energy Storage Properties through Ba^{2+} Substitution in NBT-ST Relaxor Ferroelectric Ceramics: Insights into PNR Dynamics*, International Conference on Next Generation Sustainable Materials for Water and Energy Solutions 2024 (SuWatE'24), 19–21 Nov 2024.
- 2023 K. Palani Muthu, M. Veera Gajendra Babu, **B. Bagyalakshmi**, *High-Pressure First Principle Explorations of Tetragonal KNbO_3 : Unveiling Isostructural Transitions and Electronic Properties*, International Conference on Advanced Materials, Dec 8-9, 2023.
- 2023 K. Palani Muthu, M. Veera Gajendra Babu, **B. Bagyalakshmi**, *Electronic Structure, Optical and Thermal Properties of SrTiO_3 Perovskites*, Quantum Espresso: Applications for Materials Sciences and Chemistry, University of Évora, 27-28 November 2023.
- 2023 K. Palani Muthu, T. P. Vishaul, M. Veera Gajendra Babu, **B. Bagyalakshmi**, *Structural, Electronic, Optical, Elastic and Ferroelectric Properties of BaTiO_3 - A Combined Experimental and Theoretical Approach*, International Conference on Recent Advancements in Spectroscopy (ICRAS-2023), Indian SpectroPhysics Association (ISPA), Chennai, India, 5-6 October 2023.
- 2023 T.V. Ram Mohan, S. Sasikumar, M. Veera Gajendra Babu, **B. Bagyalakshmi**, *Pressure Induced Electronic Investigation on NBT Ceramics- A First Principle Study*, International Interdisciplinary Conference on Energy, Nanotechnology and IoT (ENT 2023), 2-4 February 2023.
- 2023 K. Palani Muthu, M. Veera Gajendra Babu, **B. Bagyalakshmi**, *Electronic structure, optical, elastic and thermal properties of ATiO_3 perovskites ($A=\text{Ba}$, Sr , and Ca) – a DFT+U study*, International Interdisciplinary Conference on Energy, Nanotechnology and IoT (ENT 2023), 2-4 February 2023.
- 2023 T. P. Vishaul, K. Palani Muthu, S. M. Abdul Kader, B. Sundarakannan, M. Veera Gajendra Babu, **B. Bagyalakshmi**, *Structural, Electronic and Optical Investigations on Cr_2O_3 nanoparticles – A Combined Experimental and Theoretical Approach*.
- 2023 K. Palani Muthu, T. V. Ram Mohan, C. Sasi Kumar, **B. Bagyalakshmi**, M. Veera Gajendra Babu, *Theoretical and Experimental Investigation On Barium Titanate Ceramics*, International Interdisciplinary Conference on Energy, Nanotechnology and IoT (ENT 2023), 2-4 February 2023.
- 2023 P. Kandasamy, A. Manimeghala, M. Veera Gajendra Babu, **B. Bagyalakshmi**, *Grain Size Effect On Structure And Ferroelectric Properties Of $0.93\text{Na}_{0.5}\text{Bi}_{0.5}\text{TiO}_3$ - 0.07BaTiO_3 Ceramics*, International Interdisciplinary Conference on Energy, Nanotechnology and IoT (ENT 2023), 2-4 February 2023.

- 2023 M. N. Sakthidevi, T. V. Ram Mohan, J. S. Jerina, **B. Bagyalakshmi**, M. Veera Gajendra Babu, *Electronic Structure and Density of States of Lead Titanate*, International Interdisciplinary Conference on Energy, Nanotechnology and IoT (ENT 2023), 2-4 February 2023.
- 2023 R. S. Reshmi, M. Priya, **B. Bagyalakshmi**, M. Veera Gajendra Babu, *Structural And Dielectric Investigation On $BaTi_{1-x}Zr_xO_3$ Lead-Free Ferroelectric Ceramics*, International Interdisciplinary Conference on Energy, Nanotechnology and IoT (ENT 2023), 2-4 February 2023.
- 2023 S. Suthan, T. P. Vishaul, M. Veera Gajendra Babu, **B. Bagyalakshmi**, *Structural and Dielectric Investigation of Sn Substituted BT Ceramics*, Fifth International Conference on Recent Trends in Science and Applied Technology, Manonmaniam Sundaranar University, Tirunelveli, India.
- 2023 T. V. Ram Mohan, T. P. Vishaul, M. Veera Gajendra Babu, **B. Bagyalakshmi**, *Structural and Dielectric Investigations on BZT Lead-Free Ferroelectric Ceramics*, Fifth International Conference on Recent Trends in Science and Applied Technology, Manonmaniam Sundaranar University, Tirunelveli, India.
- 2023 T. V. Ram Mohan, T. P. Vishaul, M. Veera Gajendra Babu, **B. Bagyalakshmi**, *Structural, Dielectric and Ferroelectric Studies on 0.5BCT-0.5BZT Ceramics*, Second International Conference on Advanced Materials Chemistry at the Interface of Energy, Environment and Medicine, Manonmaniam Sundaranar University, Tirunelveli, India.
- 2023 T. P. Vishaul, T. V. Ram Mohan, **B. Bagyalakshmi**, M. Veera Gajendra Babu, *Structural and Electrical Investigations on $0.84Na_{0.5}Bi_{0.5}TiO_3$ - $0.16K_{0.5}Bi_{0.5}TiO_3$ Ceramics*, Second International Conference on Advanced Materials Chemistry at the Interface of Energy, Environment and Medicine, Manonmaniam Sundaranar University, Tirunelveli, India.
- 2021 **B. Bagyalakshmi**, M. Veera Gajendra Babu, *Evidence for Low-Symmetry Monoclinic Phase in Lead-Free Sodium Potassium Bismuth Titanate (NKBT) Ceramics*, International Conference on Advanced Materials Science (ICAMS 2021), 24–26 March 2021.
- 2016 M. Veera Gajendra Babu, **B. Bagyalakshmi**, B. Sundarakannan, *Poling Effect on Dielectric Properties of Lead-Free $Na_{0.4}K_{0.1}Bi_{0.5}TiO_3$ Relaxor Ferroelectrics*, Materials Challenges in Alternative and Renewable Energy, Hilton Clearwater Beach, Clearwater, FL, USA, 17-21 April 2016.
- 2012 **B. Bagyalakshmi**, S. M. Abdul Kader, R. T. Ananth Kumar, D. Pathinettam Padiyan, B. Sundarakannan, *Size Dependence of Charge-Transfer Absorption in Cr_2O_3 Nanocrystals*, International Conference on Materials Science and Technology (ICMST 2012), St. Thomas College, Pala, Kerala, India, 10-14 June 2012.

National Conferences

- 2018 G.C. Ancy, L. Venkidu, M. Veera Gajendra Babu, **B. Bagyalakshmi**, P. Esther Rubavathi, B. Sundarakannan, *Structural and Electrical Properties of Lead-Free $1x(Bi_{0.5}Na_{0.5})BaxZryTi(1y)O_3$ Ceramics*, National Conference on Energy Materials (NCEM2018), Manonmaniam Sundaranar University, Tirunelveli, India, 28-29 June 2018.
- 2018 L. Venkidu, M. Veera Gajendra Babu, **B. Bagyalakshmi**, B. Sundarakannan, *Grain Size Effect on Structural, Dielectric and Ferroelectric Properties of Sodium Bismuth Titanate Ceramics*, National Conference on Energy Materials (NCEM2018), Manonmaniam Sundaranar University, Tirunelveli, India, 28-29 June 2018.
- 2018 P. Esther Rubavathi, L. Venkidu, M. Veera Gajendra Babu, **B. Bagyalakshmi**, B. Sundarakannan, *Role of Ba/Ti Ratio in Tetragonal $BaTiO_3$ Ceramics*, National Conference on Energy Materials (NCEM2018), Manonmaniam Sundaranar University, Tirunelveli, India, 28-29 June 2018.
- 2018 P.M. Priya Dharsini, L. Venkidu, M. Veera Gajendra Babu, **B. Bagyalakshmi**, P. Esther Rubavathi, B. Sundarakannan, *Investigation on Structural and Impedance Properties of Lead-Free $Na_{0.5}Bi_{0.5}TiO_3$ - $CoFe_2O_4$ Multiferroic Particulate Composites*, National Conference on Energy Materials (NCEM2018), Manonmaniam Sundaranar University, Tirunelveli, India, 28-29 June 2018.

- 2016 **B. Bagyalakshmi**, M. Veera Gajendra Babu, M. S. Anwar, B. Sundarakannan, *Structural, Dielectric and Energy Storage Density of BaTiO₃ Ceramics*, National Conference on Advanced Functional Materials (FUNMAT-2016), CSIR-CECRI, Karaikudi, Tamil Nadu, India, 26-28 May 2016.
- 2015 **B. Bagyalakshmi**, N. S. Magesh, N. Chandrasekar, V. Sridharan, G. Amarendra, B. Sundarakannan, *Grain-Oriented Bismuth Titanate Ceramics Using Templated Grain Growth Method*, National Conference on Advanced Materials for Energy and Environmental Applications, Bharathiar University, Coimbatore, India, 18-20 March 2015.
- 2012 **B. Bagyalakshmi**, S. M. Abdul Kader, B. Sundarakannan, C. Madhan Kumar, N. Ponpandian, *Effect of Concentration on Particle Size and Band Gap of Cr₂O₃*, National Seminar on Advances in Materials Science, Manonmaniam Sundaranar University, Tirunelveli, India, 23-24 January 2012.
- 2012 **B. Bagyalakshmi**, S. M. Abdul Kader, B. Sundarakannan, C. Madhan Kumar, N. Ponpandian, *Structural and Size Analysis of Cr₂O₃ Nanoparticles*, Recent Trends in Materials Science (RTMS-2012), Sadakathullah Appa College, Tirunelveli, India, 17 December 2012.

Awards

- 2014 Best Oral Presentation Award received in *National Seminar on Advances in Physics-2014*, held at Manonmaniam Sundaranar University, Tirunelveli - 627 012.
- 2012 Best Oral Presentation Award received in *Recent Trends in Materials Science (RTMS-2012)*, held at Sadakathullah Appa College, Tirunelveli - 627 012.