

Website Information
Department of Physics
Dayananda Sagar University

Faculty details:

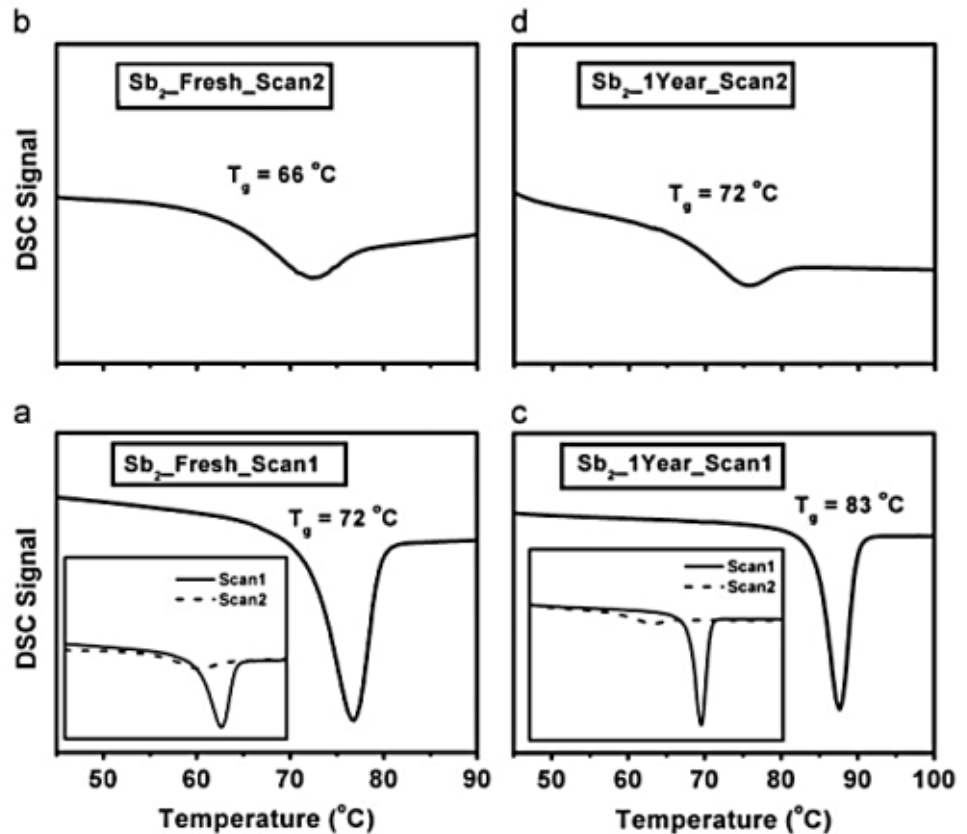
Item	Details
Faculty Name:	Dr.Vanitha.M.K.
Room No:	Cabin No: A125
Designation:	Assistant Professor
Contact No & E-Mail	9314375702 & vanithamk-phy@dsu.edu.in , vanithanew1947@gmail.com
Research Area:	1. Amorphous solids (Phase change Memory / Infrared transmitting Chalcogenide Glasses) 2. Gravitational Waves Data Analysis 3. Quantum computing and Optimization 4. IKS in Mathematics Physics and Computations

Publications (Past 5 years)	1. Desai, A. P., Sachin, Vanitha Mysore Krishna, Raju, K., Singh, S., Poonthenral, A. K., & Karuppannan, R. (2026). “<i>Strong nature of the melt in under-coordinated Se80-xTe20Sbx glasses</i>”. Inorganic Chemistry, 65(17), 9327–9339. 2. D. Sudha, J. Mundichipparakkal, S. K. J, R. Kaur, V. V. M and Vanitha. M. K, "Deep Learning-Based Deblurring of Astronomical Images for Enhanced Celestial Observation," IEEE Xplore 2026, pp.346-350, doi:10.1109/IC3ECSBHI67834.2026.11468999. 3. Muthu Bala N, Annapurna Shobitha S, Dr. Vanitha M K, Dr. T Gayathri, K. Deepthika “Dynamic Storytelling with AI: Real-Time Adaptation of Narratives through NLP and Generative Models” Grenze International Journal of Engineering and Technology, January Issue 12 (1) 2894 4. Saroj Vijaylakshmi, M. Rajesh Yadav, Harish Sharma Akkera, K. Rama Obulesu, Vanitha M K, Pittala Suresh : “Hexagonal to Orthorhombic Phase evolution in Ho doped LuFeO3 multiferroic” IOP Publishing Journal of Physics: Conference Series 3246 (2026) 012016, doi:10.1088/1742-6596/3246/1/012016 5. M. Rajesh Yadav, Teneti Pullarao, K. Rama Obulesu, Vanitha M K, Pittala Suresh, “Stabilization and structural properties of Nd-doped hexagonal LuFeO3 nanoparticles” IOP Publishing Journal of Physics: Conference Series 3246 (2026) 012003, doi:10.1088/1742-6596/3246/1/012003 6. M Vandana, M.K. Vanitha, G Srinivas Reddy, Yugandhar Bitla, Pittala Suresh “Influence of Vacuum Annealing on the Structural and Optical Properties of CeFeO3” IOP Publishing Journal of Physics: Conference Series 3246 (2026) 012019, doi:10.1088/1742-6596/3246/1/012019
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Patents : (Past 5 years)	1. Vanitha, M. K. (2025). <i>Quantum Shield-IoT: Securing IoT networks using post-quantum cryptography and predictive threat response systems</i> (Patent No. 202521084738). Published. 2. Vanitha, M. K. (2025). <i>A multi-layered quantum cryptographic framework to enhance the quantum communication security</i> (Patent No. 202541097376). Published.
Projects : (submitted)	1. Early-Stage Detection and Classification of Lung Cancer using Quantum-Enhanced Algorithm/ DST - NQM 2. Principal Investigator “Satellite-AI System for Roadside and RiverPlastic/ waste detection amp Rain....”. DST (Waste Management and Sustainability) 3. “Engineering Infrared-Transparent Chalcogenide Glasses Through an Innovative Synthesis Method”. VGST – GRE 4. “Sacred Geometry - Kolam Inspired Diffusion Graphs for Indigenous Frequency-Hopping Algorithms in Wireless Networks”. IKS- Ministry of Education, GOI
Profile Links : Scopus and Orcid	Scopus ID : 57211833139 Orcid : 0000-0001-7050-6996

Research Activities
(Write about your
best research results
max of 2-3 pages
including diagrams)

Amorphous Solids; Characterization of Bulk and Thin films. (2009-2019) IISc Bangalore. Excerpts from one of the research publications: Physical ageing in Se–Te–Sb glasses Glasses are frozen states, and their free energy is higher than the systems which are in equilibrium state. The properties of an equilibrium state depend on the external variables whereas the properties of the frozen state depend also on thermal history. The systems with higher free energy and thermal history tend to equilibrate at a finite rate by relaxation process/ageing. Generally, in a DSC spectrum T_g is seen as a baseline shift [25,26]. Ageing, which is seen as an endothermic peak, shifts the glass transition to higher temperatures. In this study, the Se60-xTe40Sbx glasses exhibit a sharp endothermic peak at T_g for $x \leq 6$. For $x \geq 46$, the endothermic peak disappears and T_g is exhibited as a baseline shift. The sharp endothermic peak at T_g is due to the ageing effect of the glasses as discussed above. It should also be mentioned that the DSC spectra shown in Fig. 2 were recorded for the samples which are 1 month old (30 days after the preparation of the samples). The observation of the sharp endothermic peak made us prepare all the compositions again in the Se60-xTe40Sbx glasses to understand the ageing effect. The freshly prepared samples were transferred to the DSC pans immediately after opening the ampoules. Even these freshly pre-pared samples also exhibit the ageing effect as shown in Figs.



Summary of Research Experience with Theoretical and Experimental Gravitational Wave Physics: [Attended and trained]

1. Institute Henri Poincare "Gravitational waves: a new messenger to explore the universe" 30 March 2021 to 1 April 2021.
2. ICERM- CUBE Fall 2020 Semester Program 'Advanced in Computational Relativity Sep- Dec 2020
3. ICGAC-14 Taiwan Aug 2020

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| | <ol style="list-style-type: none">4. 13th International LISA Symposium Sep 20205. Vienna Summer School on "Gravitational Quantum Physics " Sep 20206. 31st IAGRG Meeting "Quazi-normal Modes from Black Holes" IIT Gandhinagar Dec-20207. 23rd Capra Meeting on Radiation Reaction in General Relativity University of Texas 20208. XXIX International Conference on Neutrino Physics and Astrophysics 20209. Summer research school on "Gravitational Waves: New Challenges and Opportunities "at TÜBİTAK TUSSIDE facilities, Gebze, Turkey 201910. School on Gravitational Wave for Cosmology and Astrophysics, 2017, May 28 -- Jun 10 at Benasque, Spain.11. School on Gravitational Wave 2017 at ICTS, Bangalore. |
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Collaborations	Dr.K Ramesh Dept. of Physics IISc Bengaluru Dr.S.Asokan Dept. of ISU IISc Bengaluru Dr. BalaIyer ICTS Bengaluru Dr.Vidhyadhiraja JNCSRC Bengaluru
Invited Talks	None
Group Members (PhD Students) Open Positions: If any	4