

# Dr. A. Jegatha Christy

## Associate Professor of Physics

Jayaraj Annapackiam College for Women (Autonomous)

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Updated: April 2025

### ACADEMIC QUALIFICATION:

S.No	Degree	University/Institution	Year of Passing
1.	B.Sc	Jayaraj Annapackiam College for Women (Autonomous), Periyakulam.	2004
2.	M.Sc	Fatima College, Madurai.	2006
3.	PGDCA	Manipal Institute of Computer Education.	2006
4.	M.Phil	Mother Teresa Women's University, Kodaikanal.	2007
5.	Ph.D	Mother Teresa Women's University, Kodaikanal.	2013

**AREA OF SPECILIZATION:** Spectroscopy, Materials Science, Nano Science & Nanotechnology

### Ph.D DETAILS :

Title	Guidance	Period	Date of Degree Awarded
Photocatalytic and antimicrobial investigations of nanoparticles synthesized by combustion method.	Dr.M. Umadevi Professor and Head Department of Physics Mother Teresa Women's University, Kodaikanal, Tamilnadu, India.	July 2008 to July 2013	22.07.2013

**WORK EXPERIENCE:**

S.No	Positions held	Name of the Institute	From	To
1.	Lecturer	Jayaraj Annapackiam College for Women, Periyakulam.	13 <sup>th</sup> Jun '07	31 <sup>st</sup> Jan '08
2.	Lecturer	Mother Teresa Women's University, Kodaikanal.	4 <sup>th</sup> Feb '08	2 <sup>nd</sup> Jun '09
3.	Assistant Professor (Aided)	Fatima College, Madurai.	15 <sup>th</sup> Jun '09	5 <sup>th</sup> Nov '12
4.	Assistant Professor (Aided)	Jayaraj Annapackiam College for Women, Periyakulam.	16 <sup>th</sup> Jun '14	13 <sup>th</sup> Jun '23
5.	Associate Professor (Aided)	Jayaraj Annapackiam College for Women, Periyakulam.	14 <sup>th</sup> Jun '23	Till Date

**TOTAL EXPERIENCE:** UG – 16 years ; PG – 16 years ; M.Phil – 5 years ; Ph.D – 4 years

**ACADEMIC AFFILIATIONS:**

- ❖ Project Development Officer – 2022 - till date
- ❖ Research Consultancy Cell Coordinator – 2023 - till date
- ❖ OBE Monitoring Cell Member – 2023 - till date
- ❖ Research Committee Member – 2022 - till date
- ❖ Institution Innovation Council Member – 2022 - till date
- ❖ Research Consultancy Member – 2020-2023
- ❖ Fine Arts Coordinator – 2019-2022
- ❖ Discipline Committee Member – 2017-2021
- ❖ Press Member – 2018-2019
- ❖ IQAC Member – 2015-2019

❖ OSA Member

– 2014-2019

**PROFESSIONAL RECOGNITION:**

S.No	Recognition	Institution / Agency	Year
1.	Ph.D Guideship	Mother Teresa Women's University, Kodaikanal.	Since 2017
2.	Ph.D Synopsis External Evaluator	Bharathidasan University, Tiruchirappalli.	2019
3.	Doctoral Committee University Nominee	Fatima College - Madurai Kamaraj University, Madurai.	2022
4.	External Examiner for M.Phil and M.Sc viva voce	Mother Teresa Women's University, Kodaikanal.	2021,2022
5.	Assessor for Academic and Administrative Audit	Xavier Board Member Colleges, Tamilnadu.	2023
6.	Assistant Chief Examiner (Centre Code: 204, Jayaraj Annapackiam College for Women (Autonomous), Periyakulam) for TNPSC Group IV Exam, 09.06.2024	Tamil Nadu Public Service Commission, Government of Tamil Nadu.	2024

**SUBJECT EXPERT – BOARD OF STUDIES:**

S.No	Name of the Institution	Board	Year
1.	Mother Teresa Women's University, Kodaikanal.	PG	2018-2020
2.	Fatima College (Autonomous), Madurai.	UG & PG	2018-2021
3.	Arul Anandar College (Autonomous), Karumathur.	UG & PG	2024-2027

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**EXTERNAL EXAMINER:**

S.No	Name of the Institution	Class	Date
1.	Fatima College (Autonomous), Madurai.	Major Practical	25.03.2019
2.	Fatima College (Autonomous), Madurai.	Major Practical	14.11.2022
3.	Mother Teresa Women's University, Kodaikanal	II-PG Physics Practical	18.11.2022
4.	Fatima College (Autonomous), Madurai.	Major Practical	05.04.2023
5.	Fatima College (Autonomous), Madurai.	I-PG Physics Practical	18.10.2024
7.	Fatima College (Autonomous), Madurai.	Ph.D (Pre-Viva Voce)	03.03.2025

**RESOURCE PERSON:**

- ❖ Guest lecture on “Photocatalytic and antimicrobial investigations of nanoparticles” at Fatima College, Madurai on 29.01.2014.
- ❖ Judge for zonal wide temperance contest conducted by Seventh-Day Adventist Matric. Hr. Sec. School, Periyakulam on 22.08.2019.
- ❖ Guest Lecture on “Photocatalytic activity of metal oxide nanoparticles” at Mary Matha College of Arts and Science, Periyakulam on 11.03.2020.
- ❖ Resource Person for the In-Service Teacher Training Program for School Teachers by TNSCST by May 2022.
- ❖ Resource Person for the In-Service Teacher Training Program for School Teachers by TNSCST from 4<sup>th</sup>-9<sup>th</sup> Jan 2024.

- ❖ Question paper setter for the Summative Examinations at Lady Doak College, Madurai
- ❖ Question paper setter for the Summative Examinations at Thiagarajar College, Madurai.
- ❖ Question paper setter for the Summative Examinations at Thiruvalluvar University, Vellore.
- ❖ Presented a talk on “பாரத ரத்னா டாக்டர் ஏ.பி.ஜே. அப்துல் கலாம் வாழ்க்கை வரலாறும், சாதனைகளும்”, on account of the birthday celebration of Dr. A.P.J Abdul Kalam, Pudugai FM 91.2 MHz, Community Radio on 15.1.2024
- ❖ Invited talk on “Influence of Ternary Nanocomposites in dye effluent treatment” and served as Chairperson for Oral Paper Presentation at the 3<sup>rd</sup> International Conference on “Advanced Materials for Clean Energy and Health Applications (AMCEHA 2025)” held at University of Jaffna, Sri Lanka, during March 27-28, 2025.

#### PUBLICATIONS:

S.No	Title	Name of Journal	Volume	Page	Year
1.	Preferential solvation of acridine in binary mixtures.	Spectrochimica Acta Part A, Elsevier. (Impact Factor -4.3)	71	773 - 778	2008
2.	Synthesis and characterization of mono dispersed silver nanoparticles.	Adv. Nat. Sci: Nanosci. Nanotechnol. IOP Publishing. (Impact Factor -1.7)	3	035013 (1-4)	2012
3.	A novel combustion method to prepare CuO nanorods and its antimicrobial and photocatalytic activities.	Powder Technology, Elsevier. (Impact Factor -4.5)	235	783 - 786	2013
4.	Synthesis, characterization and photocatalytic activity of CuO nano flowers.	Spectrochimica Acta Part A, Elsevier. (Impact Factor -4.3)	109	133 - 137	2013
5.	Optical, structural and morphological properties of silver nanoparticles and its influence on the photocatalytic activity of TiO <sub>2</sub> .	Spectrochimica Acta Part A, Elsevier. (Impact Factor -4.3)	111	80-85	2013

6.	Novel combustion method to prepare octahedral NiO nanoparticles and its photocatalytic activity.	Materials Research Bulletin, Elsevier. (Impact Factor -5.3)	48	4248 - 4254	2013
7.	Optical, structural and morphological properties of silver nanoparticles and their antimicrobial activity.	International Journal of ChemTech Research	7	1191 - 1197	2014
8.	Synthesis, characterization and photocatalytic activity of ZnO nanoflakes.	Journal of Nano Energy and Power Research.	2	1-7	2014
9.	Solvatochromic spectral investigations of acridine.	International Journal of Chem Tech Research.	8	383 - 390	2015
10.	Visible light photocatalyst: Hydrothermal green synthesized TiO <sub>2</sub> NPs for degradation of picric acid.	Materials Letters, Elsevier. (Impact Factor -2.7)	222	45-49	2018
11.	Effect of neodymium doping on the structural, morphological, optical and electrical properties of copper oxide thin films.	Journal of Materials Science: Materials in Electronics, Springer. (Impact Factor -2.2)	29, Issue 13	10921 - 10923	2018
12.	Physical properties evaluation of nebulized spray pyrolysis prepared Nd doped ZnO thin films for opto-electronic applications.	Journal of Materials Science: Materials in Electronics, Springer. (Impact Factor -2.2)	30, Issue 8	7257 - 7267	2019
13.	Green hydrothermal synthesis of gold and palladium doped titanium oxide nanoparticles for multifunctional performance.	Journal of Materials Science: Materials in Electronics, Springer. (Impact Factor -2.2)	30, Issue 13	12812 - 12819	2019
14.	Enhanced photocatalysis and anticancer activity of green hydrothermal synthesized Ag@TiO <sub>2</sub> nanoparticles.	Journal of Photochemistry & Photobiology, B: Biology, Elsevier.	202	111636 (1-10)	2020

	(Impact Factor -3.2)				
15. Significance of Ni doping on structure-morphology-photoluminescence, optical and photocatalytic activity of CBD grown ZnO nanowires for opto-photocatalyst applications.	Inorganic Chemistry Communications, Elsevier. (Impact Factor -4.4)	119	108082	2020	
16. Study on the synergistic effect of terbium-doped SnO <sub>2</sub> thin film photocatalysts for dye degradation.	Journal of Nanoparticle Research, Springer. (Impact Factor -2.2)	22:359	1-14	2020	
17. Fabrication of Magnesium oxide nanoparticles using combustion method for a biological and environmental cause.	Chemical Physics Letters, Elsevier. (Impact Factor -2.8)	763	138216 (1-8)	2021	
18. Photocatalytic and antibacterial performance of iron oxide nanoparticles formed by the combustion method.	Chemical Physics Letters, Elsevier. (Impact Factor -2.8)	771	138524 (1-6)	2021	
19. Enhanced antibacterial and photocatalytic activities of nickel oxide nanostructures.	Optik, Elsevier. (Impact Factor -3.1)	237	166731 (1-11)	2021	
20. Structural, magnetic and gas sensing activity of pure and Cr doped In <sub>2</sub> O <sub>3</sub> thin films grown by pulsed laser deposition.	Coatings, MDPI. (Impact Factor -3.1)	11	588 (1-14)	2021	
21. Evaluation of Physicochemical characteristics and antimicrobial activities of copper oxide nanoparticles formed by solution combustion method.	Conference paper 2021 IEEE Regional Symposium on Micro and Nanoelectronics (RSM)	--	--	2021	
22.	Advances in Natural				

	Antibacterial activities and photocatalyzed degradation of textile dyeing waste water by Mn and F co-doped TiO <sub>2</sub> nanoparticles.	Sciences: Nanoscience and Nanotechnology, IOP Publishing. (Impact Factor -1.7)	13	045005 (1-11)	2022
23.	Novel solution combustion synthesis of CeO <sub>2</sub> /CuO nanocomposite for photocatalytic and biological applications.	Optical Materials, Elsevier. (Impact Factor -3.8)	139	113756	2023
24.	Photo-triggered antibacterial and catalytic activities of solution combustion synthesized CeO <sub>2</sub> /NiO binary nanocomposite.	Inorganic Chemistry Communications, Elsevier. (Impact Factor – 4.4)	153	110860	2023
25.	Efficient antimicrobial activity for combustion-derived CeO <sub>2</sub> quantum dots.	Inorganic Chemistry Communications, Elsevier. (Impact Factor – 4.4)	158	111616	2023
26.	Synergistic effect of nano-floret CeO <sub>2</sub> /ZnO nanocomposite as an efficient photocatalyst for environmental remediation.	Ceramics International, Elsevier. (Impact Factor – 5.1)	50	11817 - 11832	2024
27.	Monodispersed nanorod-shaped Mn-Co co-doped ZnO nanoparticles for enhanced photocatalytic and antibacterial activities.	Inorganic Chemistry Communications, Elsevier. (Impact Factor – 4.4)	163	112284	2024
28.	Enhanced photocatalytic and antibacterial performance of NiCo <sub>2</sub> S <sub>4</sub> nanostructures.	MRS Advances Springer. (Impact Factor – 0.8)	9	803 - 809	2024



29.	Hydrothermally synthesized transition metal doped ZnO nanorods for dye degradation and antibacterial activity.	Zeitschrift für Physikalische Chemie, De Gruyter. (Impact Factor – 3.0)	238	1 - 17	2024
30.	Exploring the photocatalytic efficacy of core-shell CeO <sub>2</sub> /TiO <sub>2</sub> nanocomposite synthesized via solution combustion synthesis.	Zeitschrift für Physikalische Chemie, De Gruyter. (Impact Factor – 3.0)	238	1 - 23	2024
31.	Bio-fuel assisted synthesis of barium hexaferrite nanoparticles: magnetic properties characterizations and pyridoxin sensing.	Ionics, Springer (Impact Factor - 2.4)	31	2981-2995	2025
32.	Enhanced photocatalytic behaviour of plate-like Nd <sub>2</sub> O <sub>3</sub> -anatase TiO <sub>2</sub> nanocomposite against methylene blue (MB) dye under UV irradiation.	Ionics, Springer (Impact Factor - 2.4)		Accepted	
33.	Enhanced photocatalytic performance of CeO <sub>2</sub> /ZnO/TiO <sub>2</sub> nanocomposite: Role of reduced bandgap and Core-shell heterojunction morphology.	Optical Materials, Elsevier. (Impact Factor - 3.8)		Accepted	

#### BOOKS/REPORTS/CHAPTERS/GENERAL ARTICLES etc:

S.No	Title	Author's Name	Publisher	Year of Publication
1.	<b>Book :</b> Metal oxide powder technologies: Fundamentals, Processing Methods and Applications <b>Chapter 16:</b> Metal oxides	Dr. A. Jegatha Christy	Elsevier	2020

	powder technology in membranes			
2.	<b>Book :</b> Green Photocatalytic Semiconductors <b>Chapter 18:</b> Photocatalysis Degradation of Dye Using P-Type Nanoparticles	Dr. A. Jegatha Christy	Springer	2022

**RESEARCH GUIDANCE:** M.Phil – 06 (completed); Ph.D – 02 (ongoing)

Degree	Ongoing	Completed
Ph.D	2 (Full Time)	-
M.Phil	--	06

**Ph.D SCHOLARS DETAILS:**

S.No	Name of the Scholar	Scheme	Topic	Date of Registration	Date of Viva-voce
1.	S.M. Fathima Khyrun (PHDPHY21F028)	Full Time	Synergistic Enhancement of Photocatalysis in CeO <sub>2</sub> -Based Nanocomposites for Dye Effluent Treatment	27.03.2021	Thesis submitted
2.	S. Gayathri (PHDPHY24F024)	Full Time	Physical Perspectives of Metal/Metal-oxide Nanocomposites for Biomedical Applications	02.07.2024	-----

**RESEARCH PROJECTS COMPLETED:**

S.No	Title of the Project	Duration		Total Cost	Funding Agency
		From	To		
1.	Tailoring the surface morphology of metal oxide nanoparticles and its influence on dye effluent treatment.	30 <sup>th</sup> June 2017	30 <sup>th</sup> June 2019	Rs. 4,90,000/-	UGC – SERO No.F.F.MRP-6823/16 (SERO/UGC) dated 30 June 2017
2.	Influence of binary/ternary nanocomposites on photocatalytic and self cleaning applications	1 <sup>st</sup> October 2022	1 <sup>st</sup> October 2023	Rs. 10,000/-	In-house
3.	Harnessing of ternary nanocomposite for clean water	9 <sup>th</sup> Sep 2024	-----	Rs. 10,000/-	In-house

#### PATENTS:

S.No	Title of the Patent	Design No	Date of Publication	Level
1.	Nanotechnology based dipping system for water purification	353512 - 001	13 <sup>th</sup> January 2022	Indian
2.	A Blockchain-based interface for secret remote communication through a smartphone using wireless sensor network	202241003575	04 <sup>th</sup> February 2022	Indian
3.	Nanotech-based metal oxide identifying gloves	381085-001	28 <sup>th</sup> July 2023	Indian

## CONFERENCES / WORKSHOPS ORGANIZED:

- ❖ **Organizing committee member** for International Conference on “Material Science Research and Nano Technology” organized by Department of Physics, Mother Teresa Women’s University, Kodaikanal during 27<sup>th</sup> – 29<sup>th</sup> Feb 2008.
- ❖ **Organizing committee member** for International conference on “Nanomaterials & Nanocomposites - Synthesis, Properties & Application” organized by Department of Physics, Mother Teresa Women’s University, Kodaikanal on 28<sup>th</sup> -29<sup>th</sup> Feb 2012.
- ❖ **Convener** for UGC Sponsored National Seminar on “Recent Advancement in Materials Science” organized by Department of Physics, Jayaraj Annapackiam College for Women, Periyakulam on 10<sup>th</sup> Feb 2017.
- ❖ **Convener** for One Day Seminar on “Energy Conservation” organized by PG & Research Department of Physics, Jayaraj Annapackiam College for Women, Periyakulam in collaboration with Petrol Conservation Research Association, on 15<sup>th</sup> Sep 2017.
- ❖ **Organizing secretary** for National Level Conference on “Recent Trends in Physics” organized by PG and Research Centre of Physics, Jayaraj Annapackiam College for Women, Periyakulam on 9<sup>th</sup> Feb 2018.
- ❖ **Convener** for One Day Seminar on “Energy Conservation” organized by PG & Research Department of Physics, Jayaraj Annapackiam College for Women, Periyakulam in collaboration with Petrol Conservation Research Association, on 30<sup>th</sup> Sep 2019.
- ❖ **Organizing secretary** for the International Webinar on “Functional Properties and Bandgap Engineering of ZnO – GaN Alloys” organized by PG & Research Department of Physics, Jayaraj Annapackiam College for Women, Periyakulam on 8<sup>th</sup> June 2020.
- ❖ **Organizing secretary** for the International Webinar on “Exoplanets” organized by PG & Research Department of Physics, Jayaraj Annapackiam College for Women, Periyakulam on 2nd Sep 2021.
- ❖ **Convenor** for “Transdisciplinary Research & Global Opportunities for Women”, organized by PG and Research Department of Physics, Jayaraj Annapackiam College for Women, Periyakulam on 05<sup>th</sup> Aug 2022.

- ❖ **Convenor** for the Guest Lectures organized by PG and Research Department of Physics, Jayaraj Annapackiam College for Women, Periyakulam in collaboration with Fatima College, Madurai on 21<sup>st</sup> Dec 2022.
- ❖ **Convenor** for the International Virtual Conference on “Recent Trends in Physics (ICRTP – 2023)” organized by PG and Research Centre of Physics, Jayaraj Annapackiam College for Women, Periyakulam on 16<sup>th</sup> & 17<sup>th</sup> March 2023.
- ❖ **Co-convenor** for the International Virtual Conference on “Emerging Technologies in Materials Science (ICETM -2024)” organized by PG and Research Centre of Physics, Jayaraj Annapackiam College for Women, Periyakulam on 22<sup>nd</sup> February 2024.
- ❖ **Convenor** for the Intercollegiate meet “PHYJAC-2024” organized by PG & Research Department of Physics, Jayaraj Annapackiam College for Women, Periyakulam on 19<sup>th</sup> Dec 2024.
- ❖ **Advisory committee member** for the One Day International Conference on “Advanced Nanomaterials for Sustainable Development & Energy Applications” organized by Imayam Arts & Science College, Tirupattur on 20<sup>th</sup> Feb 2025.
- ❖ **Convenor** for National Science Day Expo for school students organized by Department of Physics, Jayaraj Annapackiam College for Women, Periyakulam on 28<sup>th</sup> Feb 2025.

#### **REVIEWER FOR JOURNALS:**

- ❖ Materials Letters, Elsevier.
- ❖ Zeitschrift für Physikalische Chemie, De Gruyter.

#### **HONOURS:**

- ❖ Chairperson for Paper Presentation session in the UGC Sponsored National Conference on "Recent Trends in Physics & Materials Research" at Jayaraj Annapackiam College for Women (Autonomous), Periyakulam during 4<sup>th</sup> & 5<sup>th</sup> Feb 2016.
- ❖ Chairperson for “International Conference on Advanced Materials for Energy and Environment” organized by Department of Physics, Mother Teresa Women’s University, Kodaikanal from 10<sup>th</sup> – 11<sup>th</sup> Jan 2022.

#### **UNIVERSITIES / INSTITUTES VISITED:**

- ❖ Liverpool Hope University, Liverpool, United Kingdom.

- ❖ University of Jaffna, Srilanka.
- ❖ Pondicherry University, Portblair, Andaman and Nicobar Islands.
- ❖ Reef Research Institute, Portblair, Andaman and Nicobar Islands.
- ❖ XIM University, Bhubaneswar, Odisha.

**MEMBERSHIPS:**

- ❖ Life time member in Indian Physics Association. TIFR, Mumbai.
- ❖ Member in American Chemical Society, Newyork.