

RESUME



Name : Dr. M. MELVIN DAVID KUMAR
Designation :AssistantProfessor
Department : Physics
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PERSONALDETAILS

DateofBirth :10-06-1982
Qualification :M.Sc., M.Phil., Ph.D, SET
Designation :Assistant Professor
Department :Physics
Religion :Christian
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ACADEMIC QUALIFICATIONS

Degree	Specialization	College	University	Year of Passing
Ph.D	Physics	Karunya University	Karunya University, Coimbatore	2013
M.Phil	Physics	Manonmanium Sundaranar University	Manonmanium Sundaranar University, Tamil Nadu	2005
M.Sc	Physics	Pope's College, Sawyerpuram	Manonmanium Sundaranar University, Tamil Nadu	2004
B.Sc	Physics	Kamaraj College	Manonmanium Sundaranar University, Tamil Nadu	2002

ACADEMIC IDENTITY

VIDWANID	392218
ORCIDID	0000-0003-2937-0534
SCOPUSID	57202863117
RESEARCHERID/PUBLONS ID	-
GOOGLESCHOLARLINK	https://scholar.google.com/citations?user=MYX3XtMAAAAJ&hl=en&authuser=1

TEACHING EXPERIENCE

Date of Appointment	19-06-2023
Date of Retirement	31-06-2043
Teaching Experience	UG – 14 years
	PG – 8 years
Research	Guided MPhil: Nil Guided PhD: Nil Guiding PhScholar: Nil

COURSES/CLASSES TAUGHT	NAME OF THE INSTITUTIONS	DURATION		Period of Service	
		From	To	Years	Months
B.Sc- Physics M.Sc- Physics	St.Xavier's College, Palayamkottai	19/06/2023	Till now	-	-
B.Sc- Physics M.Sc- Physics	St.Xavier's College, Palayamkottai	18/06/2019	11/06/2022	2	11
B.Sc- Physics	Aditanar College of Arts and Science, Tuticorin	01/10/2015	02/08/2017	1	10

B.E – Engineering Physics	KPR Institute of Engineering and Technology, Coimbatore	08/07/2013	06/05/2014	-	10
B.E – Engineering Physics M.Sc- Physics	Karunya University, Coimbatore	13/02/2008	07/06/2013	5	4
B.E – Engineering Physics	Infant Jesus Engineering College, Tuticorin	15/08/2004	31/05/2007	2	9

AWARDSRECEIVED

1	Qualified in State level Eligibility Test (SET-2017) in the year 2017
2	Selected as Post-doctoral fellow under Brain Pool Korea 2014 scheme at Photoelectric and Energy Device Applications Laboratory, Incheon National University, Songdo, South Korea.
3	Best oral presentation award at 48 th winter annual conference of the Korean vacuum society, Welly Hilly, held on 09-11 February, 2015 for the paper titled as “The support of ultrathin metal layer in enhancing the optical and electrical properties of TCO layers”.
4	Best poster presentation award at National Conference on Advances in Applied Physics and Materials Science conducted by Department of Physics, Hindustan University, Tamilnadu, held on 29-30 January, 2016 for the paper titled as “CdSe Nanoparticles in type II band alignment structure: Trapping mechanism of SiO _x matrix layer”.

ADMINISTRATIVE EXPERIENCE

S. No	DESIGNATION	INSTITUTIONS	YEAR
1	Senior Resident Advisor	Karunya University	2008 - 2010
2	Lab in charge for thin film division	Karunya University	2008 – 2013

ORIENTATION/REFRESHERCOURSES/FACULTYDEVELOPMENT PROGRAMMEUNDERGONE(2)

S.No	NameoftheTraining	Name of the SponsoringAgency	PlaceandDate
1	Orientation Programme for Teachers	IQAC	St.Xavier’s College (Autonomous), Palayamkottai.& 16-17, June2023
2	Faculty Induction Proramme	Higher Education Commission, Jesuit Madurai Province	Sacred Heart College, Shembaganur, Kodaikanal. &5-7, June2023

DETAILS OF RESEARCH WORK

Research Stages	Title of the Thesis	University where the work was carried out
Post-Doctoral researcher	Nanostructured semiconductor solar cells and sensors	Photoelectric and energy device application lab, Incheon National University, South Korea
Research Scholar (Ph.D)	Quantum confinement effect in CdSe based multilayer structures prepared by thermal evaporation method	Thin film laboratory, Department of Physics, Karunya University, Coimbatore, India
Research Scholar (M.Phil)	Preparation and characterization of SnS ₂ thin films by spray pyrolysis technique	Department of Physics, Pope's College, Tuticorin, India
Master Student	Calculation of semi-empirical formula coefficients by least square method and the line of stability in Nuclear Physics	Department of Physics, Pope's College, Tuticorin, India

AREAS OF RESEARCH
▪ Quantum well structures in multilayer thin films
▪ Semiconductor spectroscopy - Band gap engineering
▪ Nanostructured Solar cells
▪ Transparent conductors and Si nanopillars
▪ Analysis of quantum confinement effect
▪ Theoretical calculations and interpretations for quantum confinement effect

PUBLICATIONS: SCOPUS INDEXED JOURNALS (34) WEB OF SCIENCE				
S. No	Title of the Paper	Name of the Journal	ISSN No., Volume, Issue, Pg. No	Impact Factor
1.	Vertical growth of MoS ₂ layers by sputtering method for efficient photoelectric application	Sensors & Actuators A	269 (2018) 355-362	4.291
2.	High-performing MoS ₂ -embedded Si photodetector	Materials Science in Semiconductor Processing	71 (2017) 35-41	4.644
3.	Effect of Quantum confinement in CdSe/Se multilayer thin films prepared by PVD technique	Materials Science in Semiconductor Processing	64 (2017) 109-114	4.644

4.	Cu ₄ O ₃ based all metal oxides for transparent photodetectors	Sensors & Actuators A	253 (2017) 35-40	4.291
5.	High performing ITO/CuO/n-Si photodetector with ultrafast photoresponse	Sensors & Actuators A	252 (2016) 35-41	4.291
6.	ITO Nanowires-embedding transparent NiO/ZnO UV Detector	Materials Research Bulletin	83 (2016) 35-40	5.6
7.	Transparent Electrode for Si Heterojunction Photoelectric Devices	Journal of Nanoscience and Nanotechnology	16 (2016) 4993-4998	1.134
8.	Increased spectral sensitivity of Si photodetector by surface plasmon effect of Ag nanowires	Infrared Physics and Technology	76 (2016) 621-625	2.638
9.	Transparent conductor-embedding high-sensitive germanium NIR photodetector	Materials Science in Semiconductor Processing	48 (2016) 95-100	4.644
10.	Highly-performing Ni/SiO ₂ /Si MIS photodetector for NIR detecting applications	Sensors & Actuators A	233 (2015) 290-294	4.291
11.	Si photodetectors imprinted with ITO nanodomains for enhanced photodetection at NIR wavelengths	Materials Science in Semiconductor Processing	40 (2015) 397-401	4.644
12.	High performing ITO/Geheterojunction photodetector for broad wavelength detection	Journal of Material Science: Materials in Electronics	26 (2015) 6099-6106	2.472
13.	Periodically patterned Si pyramids for realizing high efficient solar cells by wet etching process	Solar Energy	117 (2015) 180-186	7.188
14.	Transparent conductor-embedding nanolens for Si solar cells	Applied Physics Letters	106 (2015) 151904	3.971
15.	Impact of thin metal layer on the optical and electrical properties of Indium-doped-tin oxide and Aluminum-doped-zinc oxide layers	Superlattices and Microstructures	82 (2015) 499-506	3.22

16.	Transparent conductor-embedding nanocones for selective emitters: Optical and electrical improvements of Si solar cells	Scientific Reports	5 (2015) 9256:1-8	4.996
17.	Enhanced optical and electrical properties of Ni inserted ITO/Ni/AZO tri-layer structure for photoelectric applications	Materials Science and Engineering B	195 (2015) 84-89	3.407
18.	Three-dimensional nanodome-printed transparent conductors for high-performing Si Photodetectors	Materials Letters	148 (2015) 174-177	3.423
19.	Periodically structured Si pillars for high-performing heterojunction photodetectors	Infrared Physics and Technology	69 (2015) 174-178	2.638
20.	Transparent conductors with an ultrathin nickel layer for high-performance photoelectric device applications	Materials Science in Semiconductor Processing	31 (2015) 334-339	4.644
21.	Influence of temperature, metal layer and groove angle in the nanowire growth: A prospective study on nickel silicide nanowires	Journal of Nanoparticle Research	17 (2015) 1-7	2.253
22.	Optical and electrical properties of AZO/Ni/ITO transparent conductor	Materials Letters	143 (2015) 215-218	3.423
23.	Incident light adjustable solar cell by periodic nanolens architecture	Scientific Reports	4 (2014) 6879:1 - 8	4.996
24.	The influence of Ni layer and thickness of AZO layers on the Optoelectronic properties of AZO /Ni/AZO tri-layer deposited at RT	Materials Letters	137 (2014) 132-135	3.423
25.	Metal/Semiconductor and Transparent conductor/Semiconductor heterojunctions in high efficient photoelectric devices: Progresses and Features	International Journal of Photoenergy	2014 (2014) 1-14	2.535

26.	Evidence for quantum confinement effects in CdSe/ZnSe multilayer thin films prepared by physical vapor deposition method	ActaMaterialia	61 (2013) 4135-41	9.209
27.	Quantum confinement effect in multilayer structure of alternate CdSe and SiO _x insulator matrix thinfilms	Superlattices and Microstructures	58 (2013) 154-64	3.22
28.	Phase Transformation and Quantum Confinement Effect in CdSe/Se Multilayer Thin Films Prepared by PVD	Phase Transitions	86 (2013) 1216 – 1226	1.529
29.	Quantum Confinement of CdSenanocrystals in CdSe/Se Multilayer Thin Films	Applied Physics A : Materials Science & Processing	110, Issue 1 (2013) 87-92	2.983
30.	Structural and optical properties of CdTe/CdSeheterostructure multilayer thin films prepared by physical vapor deposition technique	Applied Nanoscience	3(2013) 453-459	3.674
31.	A comparative study on the optical properties of multilayer CdSe/CdTe thin film with single layer CdTe and CdSe films	Journal of Nano and Electronic Physics	5 No 3, (2013) 03007(4 pp)	0.178
32.	Formation of CdSe/CdTe quantum dots in multilayer thin films using PVD method	AIP Conf. Proc.	1451(2012) 176	0.40
33.	Quantum Confinement in Cadmium Selenide Multilayer Thin films using Physical Vapour Deposition method	Journal of Nano and Electronic Physics	4 No 2 (2012) 02021(3 pp)	0.178
34.	Formation of CdSe nanoparticles in multilayer thinfilms using Physical Vapour Deposition	International Journal of Nano Science and Technology	5(2011) 227-232	1.28

PUBLICATIONS: OTHER INDEXED JOURNALS (1)

S. No	Title of the Paper	Name of the Journal	ISSN No., Volume, Issue, Pg. No	Impact Factor
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1.	CdSe Nanoparticles in type II band alignment structure: Trapping mechanism of SiO _x matrix layer	International Journal of Technical Research and Applications	38 (2016) 82-86	-
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AS A RESOURCE PERSON (7)			
S. No	Name of the Event	Name of the Sponsoring Agency	Place and Date
1.	Physics Association Meeting	Department of Physics, St.Mary's College,	Turicorin, Tamilnadu 27 th September, 2021
2.	Physics Association Meeting	Department of Physics, SadakathullahAppa College	Tirunelveli, Tamilnadu 21 th August, 2019
3.	Physics Association Meeting	Department of Physics, GovindammalAditanar College for Women	Tirunelveli, Tamilnadu 20 th August, 2019
4.	National Conference on Recent Developments in Effective Materials	Department of Physics, Sarah Tucker College	Tirunelveli, Tamilnadu 1 st February, 2019
5.	International conference on A New Horizon In Materials	Department of Physics, Sarah Tucker College	Tirunelveli, Tamilnadu 11 th March, 2016
6.	Physics Association Meeting	Department of Physics, Sarah Tucker College	Tirunelveli, Tamilnadu 22 nd February, 2016
7.	Physics Association Meeting	Department of Physics, AyyaNadarJanakiAmmal College	Sivakasi, Tamilnadu 12 th February, 2011

WEBMINARS/SEMINARS/ CONFERENCES / SYMPOSIA / WORKSHOP PAPER PRESENTED: International (4); National (9)			
S. No	Name of the Event	Name of the Sponsoring Agency	Place and Date
1.	48 th Winter Annual Conference (The support of ultrathin metal layer in enhancing the optical and electrical properties of TCO layers)	The Korean vacuum society	Welly Hilly, Korea 09-11/02/2015.
2.	48 th Winter Annual Conference (Effect of Surficial length on transparent conductor coated Si pillar arrays)	The Korean vacuum society	Welly Hilly, Korea 09-11/02/2015.
3.	47 th Summer Annual Conference (The characteristics and features of confined CdSe nanoparticles in different heterostructured multilayer thin films)	The Korean vacuum society	Delpino, Korea 18-20/08/2014.

4.	47 th Summer Annual Conference (The influence of Ni layer and thickness of AZO on the optoelectronic properties of AZO/Ni/AZO tri-layer deposited at room temperature)	The Korean vacuum society	Delpino, Korea 18-20/08/2014.
5.	National Conference on Recent Trends in Applied Science & Technology	Department of Basic Sciences	Alliance College of Engineering and Design, Karnataka 26-27/10/2017
6.	National Conference on Advances in Applied Physics and Materials Science	Department of Physics	Hindustan University, Tamilnadu 29-30/01/2016
7.	National conference on Nanomaterials, Department of Physics	Department of Physics	Karunya University. Tamilnadu 03-04/12/2013.
8.	Thin Films: Science and Technology	Baba Atomic Research Center	BARC, Mumbai 9-12/11/2011.
9.	National conference on Modern Trends in Science and Technology	Department of Physics	Dr.M.V.Shetty Institute of Technology, Mangalore 14-15/10/2011
10.	National conference on Nanomaterials	Department of Physics	Karunya University. Tamilnadu 03-04/10/2010.
11.	International Indo-Italian Workshop on Semiconductor Nanostructures, Ultra Thin films and Applications	Crystal Growth Center	Anna University, Chennai, 08-10/9/2010.
12.	International conference on Electroceramics	Department of Physics	University of Delhi 15-17/12/2009
13.	National conference on Nanomaterials	Department of Physics	Karunya University. Tamilnadu 17-18/10/2008.

WEBMINARS/SEMINARS/ CONFERENCES / SYMPOSIA / WORKSHOP

ATTENDED: (4)

S. No	Name of the Event	Name of the Sponsoring Agency	Place and Date
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1.	Workshop on Aspects of Higher Education	IQAC	St.Xavier's College (Autonomous), Palayamkottai 15/06/2023
2.	National Workshop on MATLAB and its applications in Science and Technology	Department of Mathematics and Physics	Vinayaka Missions University, Salem 8-10/10/2009
3.	Research Workshop on Nanochemistry	Department of Chemistry	Karunya University 28-29/01/2009
4.	Advanced Technology Program (ATP)	Department of Nanotechnology	NIT, Warangal 30/06/2008 to 12/07/2008

COUNTRIES VISITED

Name of the Country	Purpose	Duration	
		From	To
Incheon National University, South Korea	Post-doctoral research	14/05/2014	13/05/2015
Malaysia	Research Meeting	14/05/2015	16/05/2015

EXTRA-CURRICULAR ACTIVITIES/ CO-CURRICULAR ACTIVITIES

ATTENDED(NCC/NSS/YRC/SPORTS/LITERARY AND CULTURAL ACTIVITIES)

- NSS
- Volleyball

Date: 21/06/2023

Name: Dr. M. Melvin David Kumar

