



ARUL ANANDAR COLLEGE (AUTONOMOUS)

(Reaccredited by NAAC at 'A' Grade with a CGPA of 3.66)

Karumathur – 625 514, Madurai District

E-mail: physicsaac@gmail.com

Website: www.aactni.edu.in

PG & RESEARCH DEPARTMENT OF PHYSICS

- Integrated development of urban and rural students and empowering them for social transformation through Physics education

BROCHURE

HISTORY

- 1971- Department emerged with Ancillary Physics
- 1988- Upgraded as Major Department
- 2003- CBCS system was introduced for UG Programme
- 2005- Upgraded as PG Department
- 2013- Recognized as Research Centre of Madurai Kamaraj University
- 2019 - Outcome-based education (OBE) was introduced for UG
- 2020 - Outcome-based education (OBE) was introduced for PG

MILESTONES


- ❖ 2009 - Organised Nuclear Energy Awareness Programme in collaboration with the Department of Atomic Energy (DAE), Govt. of India for 415 school teachers
- ❖ 2009 onwards - Received Research grant to the tune of 80 Lakhs from funding Agencies like UGC, DST, TNSCST and Arul Anandar College
- ❖ 2010 onwards - Conducted periodic National Science Mela/Science Exhibition with funding from DST and Arul Anandar College
- ❖ 2019 - Introduced Alumni - Staff Endowment Fellowship for the upliftment of poor students
- ❖ 2021 - Established MoUs with National & International Institutions

Unique Courses Offered (CBCS & OBE)

B. Sc.	M. Sc.
➤ Astrophysics / information Technology	➤ Energy & Environmental Physics / Nanophysics
➤ Thin Film Science	➤ Thermodynamics and Statistical Physics
➤ Medical Physics / Basic Electric Principles & Applications / Optoelectronics	➤ Applied Electronics
➤ Introduction to Nanophysics	➤ Applied Optics & Laser Physics
➤ Photonics	➤ Medical Physics
➤ Optical Communication	➤ Microprocessor & Microcontroller
➤ Space Physics	➤ Photonics
➤ Novel Materials	➤ Astrophysics
➤ Internship	➤ Project

Ph.D.
M.Sc.
B.Sc.
Programme

TEACHING FACULTY

Faculty Name	Area of Specialization	Faculty Name	Area of Specialization
 Dr. K. S. Joseph Wilson <i>M.Sc., M. Phil., Ph.D., PGDCA, Associate Professor & Head</i>	Photonics, Material Science, Nonlinear Optics, Solar Cells	 Dr. S. Sebastian <i>M.Sc., M. Ed., M.Phil., Ph.D., Assistant Professor</i>	Material Science, Solar Cells
 Dr. A. Shanmugaraju <i>M.Sc., Ph.D., PGDCA, Assistant Professor</i>	Astro-Physics	 Dr. M. Antony <i>M.Sc., M. Phil., Ph.D., Assistant Professor</i>	Lattice Dynamics
 Dr. S. Valanarasu <i>M.Sc., M. Phil., Ph.D., Assistant Professor</i>	Thin-films, Solar Cells & Sensors	 Mrs. V. Buvanewari <i>M.Sc., M.Phil., B. Ed., SET, Assistant Professor</i>	Light Harvesting Materials
 Dr. J. Sophia <i>M.Sc., M. Phil., Ph.D., SET, Assistant Professor</i>	Bio Sensors	 Dr. B. Prakash <i>M.Sc., M. Phil., Ph.D., Assistant Professor</i>	Bio Polymers Nano Composites
 Dr. C. S. A. Raj <i>M.Sc., M.Phil., Ph.D., Assistant Professor</i>	Thin-films, Nano Materials, Corrosion Science	 Dr. I. Inigo Valan <i>M.Sc., Ph.D., Assistant Professor</i>	Environmental Radioactivity
		 Dr. P. Libin Raj <i>M.Sc., M. Phil., Ph.D., SET, NET, Assistant Professor</i>	Materials Science

Teaching & Learning Process (Blended & Flipped Learning)



Participatory Learning












- Instrumentation Lab, Madurai Kamaraj University
- Indian Neutrino Observatory -TIFR, Madurai
- REST Society, Krishnagiri
- Senmac Solar Solutions, Madurai
- School of Energy and Environment, Madurai Kamaraj University
- Indian Institute of Astrophysics, Kodaikanal

INITIATIVES FOR ADVANCED LEARNERS

- ❖ Self-Learning Courses - Space Physics, Photonics, Thin Film Science and Optical Communication
- ❖ National Graduate Physics Examination (NGPE Centre code: G-6131)
- ❖ Intercollegiate meet
- ❖ Competitive examinations
- ❖ Internship programme in various fields

INITIATIVES FOR SLOW LEARNERS

- ❖ Remedial coaching classes and slip tests
- ❖ Special mentor care
- ❖ Additional practical sessions
- ❖ Study materials for the needy
- ❖ Counselling by the campus counsellor

STAFF PARTICIPATION & CONTRIBUTION

- ❖ Invited Speakers / Panelist / Chair Person / Guest lectures
- ❖ Reviewers in various Scopus indexed Journals
- ❖ Members of BoS / Academic Council in various University / Institutions
- ❖ External Examiners for UG, PG & Ph.D.
- ❖ Members in Academic Bodies such as IAPT, ASI, PSI, IAU, MSI, IEEE, FAI

Speaker / Moderator / Panelist

2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	Total
09	04	09	07	07	01	37



IMRF, Thailand, 2016



Hvar Observatory
Croatia, 2016



Liverpool University
England, 2018



IEEE - IIT, Guwahati, 2019

Fields of Research

- ❖ Solar Astrophysics
- ❖ Photonics
- ❖ Solar Cells
- ❖ Photo Sensors

RESEARCH

- ❖ Nanocomposites
- ❖ Biomaterials
- ❖ Communication Devices
- ❖ Ferroelectric Materials
- ❖ Left-Handed Materials
- ❖ Quantum Mechanics
- ❖ Non-linear Optics
- ❖ Thin Films

Details of Research Scholars

Faculty Name	Registered	Awarded	Submitted	Ongoing
Dr. I. Kulandaisamy (Retd)	03	03	-	-
Dr. M. A. Jothi Rajan (Retd)	08	06	-	02
Dr. K.S. Joseph Wilson	16	08	02	06
Dr. A. Shanmugaraju	07	05	01	01
Dr. S. Valanarasu	07	03	-	04
Total	41	25	03	13

Publications in Scopus/WoS Journals

2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	Total
17	46	40	31	21	20	175

Publications in Books/Proceedings with ISBN

2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	Total
05	02	02	02	06	02	19

RESEARCH PROJECTS

Period	Name of Staff	Title	Funding Agency	Amount (Rs.)
2012 - 2016	Dr. K. S. Joseph Wilson	Investigations of non-linear interactions in nanostructures	UGC	12,51,060
2013 - 2017	Dr. A. Shanmugaraju	Investigation on coronal mass ejections from the sun their associated activities and geo space consequences	UGC	10,56,000
2014 - 2017	Dr. M. A. Jothirajan	Comparative study on antimicrobial activity of polymer assisted synthesis/ assemble of some metal oxide nano-particles	UGC-DAE	1,68,000
2014 - 2018	Dr. S. Valanarasu	Fabrication and characterization of SnS/ N-type buffer layers for solar cell application	DST	24,90,000
2014 - 2017	Mrs. S. Asha <i>Under the Guideship of</i> Dr. M. A. Jothirajan	Investigation on biomineralization of nano hydroxyapatite intercalated biopolymeric system	DST-WOSA	21,29,323
2015 - 2019	Dr. M. A. Jothirajan	Investigations on Magnetized Chitosan Nanofibre Composites for Hyperthermia Applications	UGC	3,20,000
2019 - 2021	Dr. K. S. Joseph Wilson	Design and fabrication of microstrip patch antenna	TNSCST	3,60,000
2020 - 2021	Dr. S. Sebastian	Investigation of Zinc Silicate doped with rare earth elements for LED applications	Management	9,000
2021 - 2022	Mrs. V. Buvaneswari	Investigation on metal oxide Nanoparticles based DSSC using the natural dye extracted from Rubia Cordifolia as photo sensitizer	Management	9,000
2022 - 2024	Dr. A. Shanmugaraju	Investigations of multi-wavelength observations of solar eruptive events and their effects, associated activates and their source region characteristics	DST-SERB	10,81,000

RESEARCH FELLOWSHIPS

Period	Name of the Scholar	Guide	Scheme	Amount
2016 - 2017	P. Manikandan	Dr. M. A. Jothi Rajan	TNSCST	Rs. 10,000
2016 - 2019	N. Abirami	Dr. K. S. Joseph Wilson	Incentive Scheme for SC/ST Students, Government of Tamilnadu	Rs. 50,000 per year
2016 - 2018	K. Deva Arun Kumar	Dr. S. Valanarasu	Incentive Scheme for SC/ST Students, Government of Tamilnadu	Rs. 50,000 per year
2015 - 2018	G. Vanitha Kumari	Dr. M. A. Jothi Rajan	Rajiv Gandhi Memorial scholarship	Rs. 30,000 per month
2019 - 2021	M. Albert William	Dr. K. S. Joseph Wilson	TNSCST	Rs. 10,000 per month
2018 - 2019	M. Ismail Fatima	Dr. K. S. Joseph Wilson	Maulana Azad National Fellowship	Rs. 28,000 per month
2021 onwards	S. Sathish Kumar	Dr. S. Valanarasu	Incentive Scheme for SC/ST Students, Government of Tamilnadu	Rs. 50,000 per year
2021 - 2022	K. Mala	Dr. I. Inigo Valan	TNSCST	Rs. 7,500

RESEARCH ASSOCIATION WITH OTHER INSTITUTIONS

Name of the Staff	Collaborating Institute
Dr. K. S. Joseph Wilson	Presidency College, Chennai
	University of Gaza, Palestine
	Thang University, Ho Chi Minh, Vietnam
	Beni -Suef University, Egypt
Dr. A. Shanmugaraju	Kyung Hee University, South Korea
	Astronomical Observatory of Jagiellonian University, Poland
	Hvar observatory, Croatia
	Kodaikanal Solar observatory, Kodaikanal
	Udaipur Solar Observatory, Udaipur
Dr. S. Valanarasu	Korea Institute of Energy Technology, South Korea
	Ain Shams University, Egypt
	Dongguk University, South Korea
	Universidad Carlos III de Madrid, Spain
	Indian Institute of Science, Bangalore

RESEARCH WORK CARRIED OUT AT OTHER INSTITUTES

Year	Name of the Scholar	Collaborating Institute
2015	E. Bementa	Tata Institute of Fundamental Research, Mumbai
	S. M. Sathiya	Tata Institute of Fundamental Research, Mumbai
	M. Syed Ibrahim	Indian Institute of Astrophysics, Kodaikanal
2016	M. Syed Ibrahim	Udaipur Solar Observatory, Udaipur
	G. Earnest Stephen	CSR-DAE consortium, Indore
	G. Earnest Stephen	University of Delhi, New Delhi
2018	Suresh Karuppiyah	National Aeronautics and Space Administration (NASA), USA
2019	J. Kabiriyel	Gandhigram Rural Institute, Dindigul

MoU

- ❖ KYUN HEE University, South Korea
- ❖ JA College for Women, Periyakulam
- ❖ GTN College, Dindigul
- ❖ National College, Tiruchirappalli
- ❖ Loyola Institute of Frontier Energy, Loyola College, Chennai

NATIONAL & INTERNATIONAL - PDF / VISIT



K. Suresh,
Visit to NASA, USA



M. Syed Ibrahim
PDF at USO, Udaipur



K. Deva Arun Kumar
PDF at SIT, Tokyo, Japan



M. Benedict Lawrence,
PDF at KHU, South Korea

INFRASTRUCTURE



UG Lab



PG Lab



Research Lab



Photocatalysis Setup



Tubular Furnace



Nebulizer Spray Pyrolysis Unit - I



Spray Pyrolysis Unit -II



Four Probe Setup



Gas Sensor Setup



Chemical Bath Setup



SILAR Coating Unit



Electrodeposition Setup



Hot Air Oven



Probe sonicator



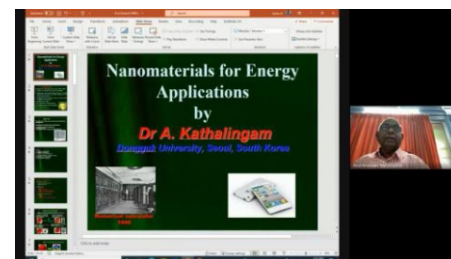
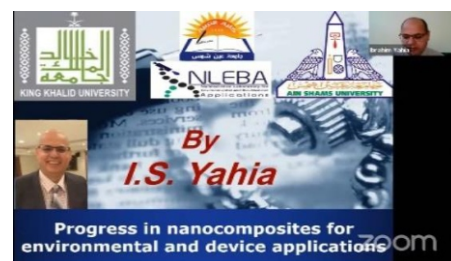
UV-Vis- Spectrometer



FTIR- Spectrometer

INTERNATIONAL WEBINAR

Event Name	Date	Resource Person
The Progress in Nanocomposites for Environmental and Device Applications	05 th Aug 2020	Dr. I. S. Yahia, <i>Professor & Head,</i> Department of Physics, School of Education, Ain Shams University, Cairo, Egypt.
Nanomaterials for Energy Applications	22 nd Sep 2021	Dr. A. Kathalingam, <i>Associate Professor,</i> Millimeter - wave Innovation Technology Research Centre, Dongguk University, Seoul, South Korea



INTERNATIONAL / NATIONAL CONFERENCES

Event Name	Date	Resource Person
State Level Seminar on Expanding Frontiers in Material Science	15 th Dec. 2016	Dr. M. Mahendran, <i>Associate Professor</i> , Thiagarajar College of Engineering, Madurai
Two-day National Level Conference on Nanoscience and Nanotechnology in the Livelihood Enhancement of Common Man	08 th & 09 th Feb 2017	Dr. Suriyamoorthy, <i>Professor (Retd)</i> , School of Energy Sciences, Madurai Kamaraj University, Madurai
National Conference on Advances in Astronomy and Space Technology	29 th Jan 2018	Dr. Ebenezer Chellasamy, <i>Scientist</i> , Kodaikanal Observatory, Kodaikanal
Two-Day State Level Seminar on "Recent Trends in Physics"	5 th & 6 th Feb 2019	Dr. M. Sathish, <i>Scientist</i> , Central Electro - Chemical Research Institute (CECRI), Karaikudi
Two-Day International Conference on "Advanced Materials" (ICAM-2020)	11 th & 12 th Feb 2020	Dr. Eswaran Murugasen, <i>Post Doc</i> , Marie Curie Researcher from Paris, France



SLEFMS- 2016



NSLECM - 2017



NCAST - 2018

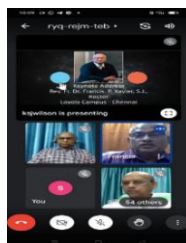


ICAM - 2020

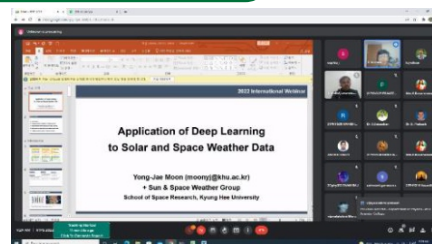
INTERNATIONAL E- CONFERENCES



23 FAI - Emerging Trends & Adaptation of Spirituality in Management, Artificial Intelligence, Education, Health, Tourism, Science and Technology, 19 - 21 February 2021



International Conference on Recent Trends in Physical Sciences, 17-18 February 2022



INTER - COLLEGIATE COMPETITIONS

Event	Date	Resource Person
PHYSAAC -16	05.02.2016	Dr. N. Vijayan, <i>Sr. Scientist</i> , NPL, CSIR, Delhi
PHYSAAC -17	28.02.2017	Dr. V. Vasu, <i>Associate Professor</i> School of Physics, Madurai Kamaraj University, Madurai
PHYSAAC -18	20.02.2018	Dr. T. Arockiadoss, <i>Assistant Professor</i> School of Physics, DDE, Madurai Kamaraj University, Madurai
PHYSAAC -19	06.02.2019	Dr. V. Vasu, <i>Associate Professor</i> , School of Physics, Madurai Kamaraj University, Madurai
PHYSAAC -20	12.02.2020	Dr. M. Eswaran, <i>Post-Doctoral Fellow</i> , Marie Curie Researcher from Paris, France
PHYSAAC -22	08.04.2022	Dr. S. Rajashabala, <i>Asso. Prof. & Head</i> , Dept. of Theoretical Physics, Madurai Kamaraj University, Madurai



PHYSAAC-2016



PHYSAAC-2022

HEALTHY PRACTICES OF THE DEPARTMENT

- ❖ Orientation to first year UG & PG students
- ❖ Intra and Intercollegiate Competitions
- ❖ Physics Association (PHYSAAC) activities such as Student Presentations, Model Making, Guest Lectures, Science Awareness Programmes
- ❖ NET/SET coaching (PG)
- ❖ Field Visit to research institutes
- ❖ Research seminar presentation (PG & Research Scholars)
- ❖ Students Internship and exposure programme
- ❖ Periodical Alumni Meet
- ❖ Physics NEWS letter
- ❖ Utilization of research equipment by PG & Research Scholars of neighbouring Institutions



Ph D Seminar



India-based Neutrino Observatory



NEWS Letter



Solar Energy Park, MKU



Kudankulam Nuclear Plant



Field visit Kodaikanal Solar

ALUMNI



Alumni Meet - 2018



Alumni Meet - 2019



Scholarship- 2016



Scholarship- 2019

EXTENSION ACTIVITIES



Tree Plantation and Environmental conservation, Vadakampatti (16-03-2017)



Awareness Rally on Programme on Prevention of Female Infanticide, Kasinathapuram (06-03-2021)

CELEBRATIONS



Farewell



Pongal