

(An Autonomous Institution Affiliated to Madurai Kamaraj University)
Re-accredited (3rd cycle) by NAAC with 'A' Grade - CGPA 3.66
on a 4-point scale

Karumathur - 625 514, Madurai District, Tamilnadu

Research Activities at Arul Anandar College, Karumathur

S.No	Research Facility	Page link
1	Establishment of Research Council	P
2	Research Council Policy	P
3	Code of Ethics in Research	8
4	Research Council and Ethics committee	8
5	Research Advisory Committee	(P)
6	FIST-DST Implementation Committee	(P)
7	Seed Money Policy	(P)
8	Seed Grant – Selection Committee	P
9	List of Professors who got Seed money grant	P
10	Research Centre at AAC	P
11	Research Labs at AAC	(P)
12	Instrumental Facilities at AAC	(P)
13	List of Research projects	(P)

14	List of Research Guides	P
15	List of Scholars pursuing Ph.D. at AAC	P
16	List of Scholars Awarded with Ph.D. 2016-21	P
17	List of Scholars registered during 2016-2021	8
18	Research Publications - IQAC Newsletter	8
19	Financial support to attend Conferences	P
20	Software for Research	P
21	List of grants received by Students	8
22	Research collaborations	P
23	Collaborative Publications with Foreign Universities	P
24	Best Researcher and Publication award	P
25	Patents	

Establishment of Research Council



INTERNAL QUALITY ASSURANCE CELL ARUL ANANDAR COLLEGE (AUTONOMOUS)

AFFILIATED TO MADURAI KAMARAJ UNIVERSITY
Reaccredited By NAAC at 'A' Grade With a CGPA Of 3.66
ANANDA NAGAR, KARUAMATHUR - 625 514, MADURAI DT
TAMILNADU, INDIA.

Internal Quality Assurance Cell Meeting

Venue

: Prince Hall

Date

: 10.01.2017 (Tuesday)

Time

: 11.00 a.m

Agenda: Discussion on the Proposal of Research Council

Sl.No	Members Present	Signature
1	Rev.Dr.S.Basil Xavier, S.J.,	@ 31.
	(Principal & Chairman)	10gun
2	Dr.A.Shanmugaraju	A.S.
3	Rev.Dr.M.Anbarasu,S.J.	11.00
4	Dr.I.Jeyaraj)A
5	Dr.S.Arul Prasad	Alulla
6	Rev.Dr.C.Mary Lowrencia	Sr. Lowrencia
7	Dr.S.Rayappan	S. Km
8	Dr.S. Valanarasu	J. 10 mm
9	Dr.M.Arulappan	Good fruit
10	Mr.A.Raja	a par
11	Mr.J.Keba Immanuel	
12	Ms.R.Josephine Therese	000
13	Ms.S.J.Cynthia	
	Students Representative	
14	I.Francis Xavier (II Year Physics)	
15	M.Kalaiarasi (II Year English Literature)	M Kalai Avar T
16	Mr.M.Joseph Rethinasamy	M Kalaileace
	Executive Director, Hotel Germanus	M-Lens
	Alumni Representative	
17	Mr.C.Muthupandi	12. 192 cm ? -

Minutes of the Meeting

Dr.A.Shanmugaraj, the IQAC coordinator welcomed the gathering. The members present discussed the status of research thrust of the faculty and emphasized to strengthen the research and project cell. It was also decided to lay a special focus on fostering research activities by establishing research council. It was also proposed to appoint a faculty as Dean research to channelize and monitor the research endeavours. The members of the meeting unanimously accepted the proposal of forming the research council to enrich the dimension of research. As a follow up the heads of all the departments received the oral feedback on this aspect and gave their consensus to the proposal of research council. The IQAC took the responsibility of framing the vision, mission of the research council and the responsibilities of the members.

Co-ordinator IOAC





(AUTONOMOUS) Karumathur - 625 514. Madurai Dt., Tamil Nadu.

26.04.2017

To Dr. M. George Joseph M.A., M.Phil, PhD M.A (Pol Sci) DGT Associate Professor, Department of Philosophy, Arul Anandar College, Karumathur.

Dear Dr. M. George Joseph,

Sub: Appointment as Dean-Research.

The Board of Management of Arul Anandar College, Karumathur, is pleased to appoint you as Dean-Research of Arul Anandar College for the period of three years. Your appointment to the post mentioned above is effective from April 26th, 2017.

It the offer is acceptable to you, please acknowledge and convey your consent, in writing, to the undersigned at earliest.

Herewith is attached a copy of the responsibilities of Dean-Research.

Wishing you all the best in your new assignment!

Yours sincerely

Allest William, s.g.

FR. ALBERT WILLIAM S.J SECRETARY

Copy: Rev. Fr. Rector, Arul Anandar College, Karumathur Rev. Fr. Principal, Arul Anandar College, Karuamthur Office Superintendent, Arul Anandar College, Karumathur

Rev. Dr. S. MANI VALAN, S.J.,

Secretary



ARUL ANANDAR COLLEGE

(AUTONOMOUS) Karumathur - 625 514 Madurai District Tamil Nadu.

01.06.2018

To
Dr.AMBUDOSS ARVIND
Associate Professor of Agriculture
Dept of RDS
Arul Anandar College
Karumathur, Madurai.

Dear Dr. Ambudoss Arvind,

Sub: Appointment as Dean-Research.

The Board of Management of Arul Anandar College, Karumathur is pleased to appoint you as **Dean-Research** of Arul Anandar College for the period of three years. Your appointment to the post mentioned above is effective from **01.06.2018**.

It the offer is acceptable to you, please acknowledge and convey your consent, in writing to the undersigned at earliest.

Herewith is attached a copy of the responsibilities of Dean-Research.

Wishing you all the best in your new Assignment!

Thanking you,

SECRETARY

Copy to

1. Rev.Fr.Rector, Arul Anandar College, Karumathur

2. Rev.Fr.Principal, Arul Anandar College, Karumathur

3. Office Superintendent, Arul Anandar College, Karumathur

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Research Council Policy



RESEARCH POLICY

Arul Anandar College has a well-defined policy for promotion of research. The Project and Research Cell was established in 2000 to plan, prepare and implement the steps for the development of Research and Development. The nomenclature was changed in 2018 as Research Council as per the guidelines of UGC Autonomous Colleges' Regulation (Act 2018). The Research Council is assigned with the additional responsibility of Ethics Committee as well.

The college visualises integrated development of rural scholars and communities with innovative and socially contextualised multi-disciplinary research programmes and projects. The college also fosters theoretical researches by the faculty and students in their respective disciplines. The Research Council is endowed with the responsibilities of promotion of research activities and monitoring of ethical practices in research and research publications.

The Research Council avails opportunities for collaborating and sharing of knowledge and best practices. It conducts training programmes for the faculty and scholars on recent developments in research. The Research Council expedites the research activities by encouraging the researchers to enrich their knowledge, enhance their skills and grow to the optimum.



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Karumathur - 625 514, Madurai District, Tamilnadu

RESEARCH VISION AND MISSION

Vision

To facilitate excellence in research programmes, by keeping pace with rapidly changing knowledge and technology, for the integrated development of researchers and communities.

Mission

- 1. To promote multi-disciplinary research at the frontiers of Arts, Science, Commerce and Physical Education.
- 2. To identify creative, sincere and dedicated rural students who are able to pursue challenging research programmes and projects.
- To create a dynamic, innovative and better research environment for exchange of knowledge, skills and experiences among the research scholars and establish highly motivated, talented academicians and professionals.
- 4. To create platform for research-industry interaction and societal linkage.

Responsibilities

- Promoting institute's research and development, and academic and research training activities, including the development, review and monitoring of achievements under the Research & Development
- Developing institutional plan for research and development and improving the Institute's research capacities

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- Motivating all faculties to pursue research in their respective areas of expertise
- Encouraging the researchers to find funding solutions with Industries and research Institutions
- Protecting the Institute's intellectual property and copyright and commercialize them as per the procedures
- Promoting and streamlining consultancy activities related to research and development
- Developing infrastructure conducive to promoting the quality and quantity of research and development
- Prioritizing the areas of research and development; and monitoring the quality and quantity of research and development
- Instituting research seed money at the institutional level to encourage budding researchers with research grant, and to create need-based infrastructure for research
- Monitoring the proper utilization of funds and timely submission of project reports
- Identifying emerging areas of research and development and disseminating them among potential researchers
- Creating conducive atmosphere for research and developing suitable mechanisms to the best possible ways of engaging in research
- Monitoring the quality of research programmes and projects, and improving the research infrastructure through research projects

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- Organising workshops on research methodology and providing training programmes for the research scholars
- Monitoring the progression of research scholars
- Encouraging multi-disciplinary research endeavours across faculties and departments
- · Overseeing the application of the Code of Research Ethics for the responsible practice of research
- Encouraging research aptitude among PG students
- Evaluating the research potentials of PG programmes
- Promoting strategic cooperation and durable partnerships with industries for applied research

Principal PRINCIPAL Arul Anandar College Karumathur-625 514 Madurai Dt.

Code of Ethics in Research





An Autonomous Institution Affiliated to Madural Kamaraj University Re-accredited (3rd cycle) by NAAC with 'A' Grade - CGPA 3.66 on a 4-point scale

Karumathur - 625 514, Madurai District, Tamilnadu

CODE OF ETHICS IN RESEARCH

The Research Council of Arul Anandar College visualises integrated development of rural scholars and communities with innovative and socially contextualised multi-disciplinary research programmes and projects. The college also fosters theoretical researches by the faculty and students in their respective disciplines.

Arul Anandar College undertakes to comply with the provisions formulated by the UGC for the promotion of Academic Integrity and Prevention of Plagiarism in Higher Education Institutions.

Moral integrity and social relevance make research outcome trustable and usable. The Research Council of the college promotes intellectual honesty and integrity among researchers and encourages ideal research habits. To ensure such values, the college offers a 2-credit course on Research and Publication Ethics as a compulsory course for all PhD scholars. The practice of code of ethics in research is promoted among the faculty to deter them from research and publication misconducts.

Arul Anandar College views research misconduct as extremely troubling and as a threat to the basic principles of research and the ethical standards of the College. The Research Council will examine research publications for any violation of code of conduct of research, such as theft of ideas, plagiarism and fabrication of results, and will recommend to the college for suitable action. Accordingly, the college will take all incidents of research misconduct seriously, and will ensure that the procedures for the inquiry, investigation and adjudication of any misconduct are just for all parties involved.





Research Council and Ethics Committee at AAC

Rev. Dr. GODWIN RUFUS, S.J. M.A., M.Phil., Ph.D.,

Principal



ARUL ANANDAR COLLEGE

(AUTONOMOUS) Karumathur - 625 514. Madurai Dt. Tamil Nadu.

08. RESEARCH COUNCIL & ETHICS COMMITTEE

1. Rev. Dr Godwin Rufus SJ	Principal	Chairman
2. Dr Ambudoss Arvind	Dean - Research	Convenor
3. Dr George Joseph M	Asso. Prof. Philosophy	Member
4. Dr Valanarasu S	Asst Prof. Physics	Member
5. Dr Malar Kannan S P	Asst Prof. RDS	Member
6. Dr Nivetha Martin	Asst Prof. Maths	Member
7. Dr Mabel Joshaline C	Asst Prof. RDS	Member
8. Ms Ismail Fathima M	Scholar, Science	Member
9. Rev. Fr Lawrence	Scholar, Social Work	Member
10. Ms Amirtham R	Scholar, Social Work	Member

09. BRITTO PUBLISHING HOUSE

1. Rev. Dr Godwin Rufus SJ	Principal	Chairman
2. Dr Martin J	Asst Prof. History	Convenor
3. Dr Gurusamy G	Asst Prof. Tamil Lang. Lit.	Member
4. Dr Veerasamy P	Asst Prof. English Lang. & Lit.	Member
5. Dr Manimegala S	Asst Prof. Tamil Lang. Lit.	Member

10. LIBRARY COMMITTEE

1. Rev. Dr Godwin Rufus SJ	Principal	Chairman
2. Dr Duraisingam A	Librarian & Vice Principal	Convenor
3. Dr George Joseph M	Head, Philosophy	Member
4. Dr Antony Singh Dhas D	Asst Prof. Economics	Member
5. Dr Malar Kannan S P	Asst Prof. RDS	Member
6. Dr Muthukumar A	Asst Prof. Phy. Edu.	Member
7. Mr Justin Kennedy R	Asst Prof. Comp. Sci.	Member
8. Mr Karuppathevan O	Library Asst	Member



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Research Advisory Committee

Rev. Dr. GODWIN RUFUS, S.J.

Principal



ARUL ANANDAR COLLEGE

(AUTONOMOUS) Karumathur - 625 514. Madurai Dt. Tamil Nadu.

RESEARCH ADVISORY COMMITTEE

Date: 19.06.2020

The following are the members of Research and Advisory Committee for the academic year 2020-2021.

S.No	Members	Designation		
1	Dr.Godwin Rufus S J	Principal (Chairman)		
2	Dr. Ambudos Arvind	Dean Research (Convener)		
3	Dr.L.Arockiaraj	Associate Professor & Head, RDS (Member)		
4	Dr.M.George Joseph	Associate Professor & Head, Philosophy(Member		
5	Dr.A.Joseph Charlie Arockia Doss	Associate Professor & Head, Tamil (Member)		
6	Dr. S.Jesarajan	Associate Professor & Head, English (Member)		
7	Dr.K.S. Joseph Wilson	Associate Professor & Head, Physics (Member)		
8	Dr.S.Basil Xavier SJ	Associate Professor, Philosophy (Member)		
9	Dr. A. Thomas William	Associate Professor, RDS (Member)		
10	Dr.S.Arul Prasad	Associate Professor, RDS (Member)		
11	Rev.Dr.M.Anbarasu	Assistant Professor , Tamil (Member)		
12	Dr. A. Shanmugaraju	Assistant Professor ,Physics (Member)		
13	Dr.S. Valanarasu	Assistant Professor ,Physics (Member)		
14	Dr.A. Sebastian Mahimairaj	Assistant Professor, RDS (Member)		
15	Sr.Dr. C.Mary Lowrencia	Assistant Professor, English (Member)		
16	Dr.G.Gurusamy	Assistant Professor , Tamil (Member)		
17	Dr.S.Ganesh	Assistant Professor ,Tamil (Member)		
18	Dr.N.Savitha Devi	Assistant Professor, Chemistry (Member)		
19	Dr.S. Martin	Assistant Professor, Chemistry (Member)		
20	Dr.M.Gilbert Rani	Assistant Professor, Mathematics (Member)		
21	Dr.G.Ramkumar	Assistant Professor, Mathematics (Member)		
22	Dr. Nivetha Martin	Assistant Professor, Mathematics (Member)		
		-		





FIST-DST Implementation Committee

Rev. Dr. GODWIN RUFUS, S.J. M.A., M.Phil., Ph.D.,

Principal



ARUL ANANDAR COLLEGE

(AUTONOMOUS) Karumathur - 625 514. Madurai Dt. Tamil Nadu.

05. ACADEMIC AUDIT COMMITTEE

1. Rev. Dr Godwin Rufus SJ	Principal	Chairman
2. Dr Antony Singh Dhas D	Coordinator - IQAC	Convenor
3. Dr Shanmugaraju A	Dean - Academic	Member
4. Dr Sundararaj A	Deputy Principal (Shift II)	Member
5. Dr Arul Prasad S	Controller of Examinations	Member
6. Dr Ramkumar G	Asst Prof.	Member
7. Mr Michael Venish V	Asst Prof.	Member
8. Ms Virgin Arockiamary M	Asst Prof.	Member

06. FUND FOR IMPROVEMENT OF SCIENCE AND TECHNOLOGY : FIST - DST IMPLEMENTATION COMMITTEE

1. Rev. Dr Godwin Rufus SJ	Principal	Chairman
2. Dr Joseph Wilson K S	Asso. Prof.	Convenor
3. Rev. Dr Gilburt Camillus V SJ	Secretary	Member
4. Dr Shanmugaraju A	Dean - Academic	Member
5. Dr George Joseph M	Asso. Prof.	Member
6. Dr Xavier Adaikalaraj J	Asso. Prof.	Member
7. Dr Rayappan S	Asst Prof.	Member
8. Dr Malar Kannan S P	Asst Prof.	Member

PRINCIPAL

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Seed Money Policy



ARUL ANANDAR COLLEGE

(AUTONOMOUS) Karumathur - 625 514. Madurai Dt., Tamil Nadu. Tel : 04549 - 287221, 287052, 287299, 287420, 287421

Fax: +91 - 4549 - 287208

Policy for Seed Grant

Teaching, Research and Extension has been the integral part and hall mark of a University / College level educator. Therefore a corpus amount has been created by AAC management and from the accrued interest a few faculty will be allotted a grant every year. This is to initiate, encourage and expose young staff members to undertake independent minor research and the outcome of the same be published as articles in Peer Reviewed journals recognized by UGC.

The Project period will be for one year. A selection committee will be formed under the Chairmanship of the Principal and Dean- Research as convener and senior staff as its members with ample research experience

Eligibility for the Seed Grant:

Preference/ priority for selection will be based on the following.

- 1. One proposal per person.
- 2. First time project applicants.
- 3. Self Financed Section.
- 4. Freshers' with atleast one UGC CARE journal publications.
- When many applications are from one department the most eligible on merit cum seniority will be selected.
- 6. Those with ongoing project are not eligible.
- On project completion, submission of a Project report and an audited statement after due settlement of the accounts must be made.
- Only on Publishing in Peer reviewed Journals recognized by UGC will the person be eligible to apply for the Grant again.

Dean-Research

Principal

PRINCIPAL

ARUL ANANDAR COLLEGE
(AUTONOMOUS)

KARUMATHUR-625 514

Madurai - Dist.

Seed Grant – Selection Committee



ARUL ANANDAR COLLEGE

(AUTONOMOUS) Karumathur - 625 514. Madurai Dt., Tamil Nadu. Tel : 04549 - 287221, 287052,

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SEED GRANT- SELECTION COMMITTEE

The following are the members of the Arul Anandar College- Seed Grant selection committee for the year 2020-21. They will scrutinize and select project proposals.

1. Rev. Dr. Godwin Rufus	-	Principal &	Chairman
--------------------------	---	-------------	----------

2. Dr. Ambudoss Arvind - Convenor

3. Dr. George Joseph M - Member

4. Dr. Joseph Wilson KS - Member

5. Dr. Thomas William A - Member

6. Dr. Shanmugaraju A - Member

CONTROL OF THE PROPERTY OF THE

Principal

PRINCIPAL

ARUL ANANDAR COLLEGE

(AUTONOMOUS)

KARUMATHUR-625 514

Madurai - Dist.

List of Teachers who received Seed money in 2020

Rev. Dr. GODWIN RUFUS, S.J.
M.A., M.Phil., Ph.D.,

Principal



ARUL ANANDAR COLLEGE

(AUTONOMOUS) Karumathur - 625 514. Madurai Dt. Tamil Nadu.

Date: 28.10.2020

Seed Money - Minor Project

The following are the selected list of applicants for the Seed Money for the year 2020

S.No	Principal Investigator	Project Title	Project	Department	Amount Rs
1	Mr.M. Karunanidhi	Folklore and Concepts presented in the circles of Arul Anandar College (Songs, Stories, Rituals Gods)	Minor	Tamil	9000.00
2	Dr.M. Amalraj	Catalytic Hydrogen Production from Sodium borohydride hydrolysis using metal oxide (M= Co, Ni, Cu) / carbon core- Shell nanocomposites	Minor	Chemistry	9000.00
3	Dr.S. Sebastian	Investigation of Zinc Silicate (Zn2SiO4) doped with Rare Earth Elements (REE) for Light Emitting Diodes (LED) Applications	Minor	Physics	9000.00
4	Dr.M. Mahadevan	"Managing the Street Vending Business in Holy Religious Places in Madurai District"	Minor	BBA	9000.00
5	Ms.I. Juliet Santhi	An exploration of the perceptions and experiences of On-line Learning in Arul Anandar College during Lockdown	Minor	Computer Science	9000.00
6	Dr.K.U. Pavitra Krishna	Health and nutritional status of women professors and impact of nutrition education	Minor	Food Science	9000.00

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List of Teachers who received Seed money in 2021

Rev. Dr. GODWIN RUFUS, S.J. M.A., M.Phil.,Ph.D.,

Principal



ARUL ANANDAR COLLEGE

(AUTONOMOUS) Karumathur - 625 514. Madurai Dt. Tamil Nadu.

Date: 15.09.2021

Seed Money - Minor Project

The following are the selected list of applicants for the Seed Money for the year 2021

S.No	Principal Investigator	Project Title	Project	Department	Amount Rs
1	Mr. S. Vijay	Conceptualization and Discussions of Marginalized people in Tamil Modern Poetry	Seed Minor	Tamil	9000.00
2	Dr.A. John Jeevagan	Sn3O4 Supported PdNi Ordered Intermetallic Photocatalyst for Hydrogen Generation under Visible Light	Minor	Chemistry	9000.00
3	Dr.K.Kombaiah	The Synergic effect of novel metal ferrite (MFe ₂ O ₄ , M=Zn, Co, Cu, Ni)MoS ₂ /rGO ternary composites for effective water splitting and H ₂ production	Minor	Chemistry	9000.00
4	Mrs.V.Buvaneswari	Investigation on metal oxide Nanoparticles based DSSC using the natural dye extracted from Rubia Cordifolia as photo sensitizer	Minor	Physics	9000.00
5	Mrs.P.Revathi E.Krithika	Development and characterization of vegetable leather with incorporating functional values	Minor	Food Science	9000.00
6	Dr.K.Kathiresan	Isolated and combination effects of yoga with calisthenics exercise on selected physical, physiological and performance variables among the school level	Minor	Phy.Edu.	9000.00

DEAN RESEARCH

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Research outcome - Seed money grant

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Available online at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/he



Sulphonated silica and sulphonated silica / carbon particles as efficient catalysts for hydrogen generation from sodium borohydride hydrolysis

Hayagreevan C a , Siva B a , Rahul R a , Denisdon S a , John Jeevagan A a , Adinaveen T b , Amalraj M a,*

^a Department of Chemistry, Arul Anandar College (Autonomous), Karumathur, Madurai, 625514, Tamilnadu, India

HIGHLIGHTS

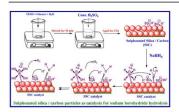
- Sulphonated Silica (SS) and SS/ Carbon (SSC) was prepared using sol-gel method.
- ullet TEM and N_2 adsorption/desorption studies confirmed the porous nature of catalysts.
- SS and SSC showed good catalytic activity towards the hydrolysis of NaBH₄.
- ullet Arrhenius plot showed lower E_a for SSC than SS catalyst towards NaBH₄ hydrolysis.
- Erying plot showed Langmuir-Hinshelwood associative mechanism at SS and SSC.

ARTICLE INFO

Article history: Received 28 May 2021 Received in revised form 13 July 2021 Accepted 25 July 2021 Available online xxx

Keywords: Hydrogen production Sodium borohydride hydrolysis Sol-gel method

GRAPHICAL ABSTRACT



ABSTRACT

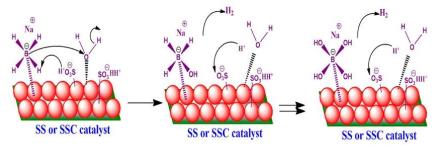
In the present study, silica, sulphonated silica (SS) and sulphonated silica/carbon (SSC) particles are prepared by sol-gel method using tetra-ethyl ortho-silicate and glucose as sources for silica and carbon, respectively and used as catalysts for sodium borohydride (NaBH₄) hydrolysis to produce hydrogen. The acid density calculated by back titration method shows the acidic nature of SS and SSC. Further, the catalysts are characterized using FT-IR, XRD, SEM, TEM, EDAX and N₂ physisorption studies. TEM and N₂ adsorption/ desorption studies revealed the porous nature of the particles. Further, the catalytic activities of SS and SSC are analysed towards NaBH₄ hydrolysis. It is found that both SS and SSC enhance the sodium borohydride hydrolysis significantly with hydrogen generation rates of 768 and 914 mL min⁻¹ g⁻¹, respectively. Using Arrhenius plot, the activation energies of SS and SSC are calculated as 24.74 and 18.97 kJ mol⁻¹, respectively. Further, thermodynamic parameters like Δ H¹, Δ S¹ and Δ G¹ of the activated complex are calculated

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Please cite this article as: C H et al., Sulphonated silica and sulphonated silica / carbon particles as efficient catalysts for hydrogen generation from sodium borohydride hydrolysis, International Journal of Hydrogen Energy, https://doi.org/10.1016/j.ijhydene.2021.07.195

^b Department of Chemistry, Loyola College (Autonomous), Nungambakkam, Chennai, 600034, Tamilnadu, India

^{*} Corresponding author. E-mail address: amalraj@aactni.edu.in (A. M). https://doi.org/10.1016/j.ijhydene.2021.07.195



Scheme 3 – Schematic illustration for the proposed Langmuir-Hinshelwood associative mechanism of NaBH₄ hydrolysis at SS or SSC catalysts.

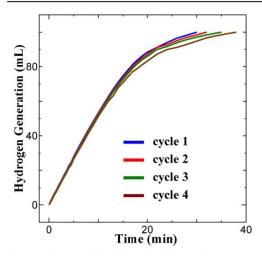


Fig. 13 – The reusability of SSC catalyst towards NaBH₄ hydrolysis (2% NaBH₄ solution; pH ~7; 298 K; amount of catalyst: 5 mg) for four cycles.

catalyst [54,55]. These results show that the SSC catalyst is durable for 4 cycles for the hydrolysis of $NaBH_4$.

Conclusion

SP, SS and SSC particles were prepared by sol-gel method, characterized using various spectral techniques and successfully employed as catalysts for the hydrolysis of NaBH₄ for the generation of molecular hydrogen. The acid densities of SS, SSC and CP were calculated using back titration method and the values are 2.4, 2.6 and 0.8 mmol g $^{-1}$ of catalyst indicating the high acidic nature of SSC than SS. TEM and N₂ adsorption/desorption studies confirmed the porous nature of the particles. In addition, the incorporation of carbon particles on SS increases the surface area of SSC (657.2 m 2 g $^{-1}$) than that

of SS (526.5 m² g⁻¹). In NaBH₄ hydrolysis, both SS and SSC catalysts significantly enhanced the hydrogen production rate compared to SP and CP catalysts. While comparing the catalytic activity of SS and SSC towards NaBH4 hydrolysis, the hydrogen production rate of SSC (914 mL min^{-1} g^{-1} of catalyst) is predominant than that of SS (768 mL min⁻¹ g⁻¹ of catalyst). Using Arrhenius plot, the activation energies of SS and SSC were calculated as 24.74 ± 0.4 and 18.97 ± 0.4 kJ mol⁻¹, respectively for NaBH4 hydrolysis. The lower value of activation energy for SSC compared to SS indicates the higher catalytic activity of SSC towards NaBH4 hydrolysis due to the synergistic effect caused by surface active $-SO_3H$ groups present in SSC besides the larger surface area provided by carbon particles. The thermodynamic parameters for the activated complex were calculated using Erying plot. The negative value of ΔS^{\ddagger} shows the Langmuir-Hinshelwood associative mechanism towards the hydrolysis of NaBH₄ hydrolysis at both SS and SSC catalysts. Further, the SSC catalyst is durable up to 4 cycles without significant loss of catalytic activity towards NaBH4 hydrolysis. This study opens up a new avenue for the utilization of acidic catalysts towards the hydrolysis of NaBH₄ for hydrogen production.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgement

The authors are deeply grateful for the financial support from Arul Anandar College (Autonomous), Karumathur 625 514, Madurai, Tamil Nadu, India in the form of seed money minor – project 2020–2021. Many thanks to Prof. Dr. S. Abraham John, Centre for Nanoscience and Nanotechnology, Gandhigram Rural Institute, Gandhigram, Tamil Nadu, India for his support and guidance.

Please cite this article as: C H et al., Sulphonated silica and sulphonated silica / carbon particles as efficient catalysts for hydrogen generation from sodium borohydride hydrolysis, International Journal of Hydrogen Energy, https://doi.org/10.1016/j.ijhydene.2021.07.195

Research Center at AAC



மதுரை காமரசர் பலிகலைக்கழகம்

தொலைபேசி : 858471 முதல்

858475 euens

தந்தி ; 'பல்கலைக்கழகம்' தொலை அச்சு: 445–308

மு.கா.ப. உள்ளே

பல்கலைத்கர் மதுரை - 625 021,

(தமவு செய்து பசர்வை எண்ணை குறிக்கவும்)

mar. R.3/MKU/Recog.of Dept./BSc/RD/'2K/55

Gp# 14-11-2000

الجيانانواف

Thiru K. Chidambaram, Ragistrar 1/c.

To

The Principal & Secretary
Arul Anandar College (Autonomous)
Karumathur-625 514
Madurai-Dt.

ABUL ANAUDAR COLLEGE

Hacetred Ca: 28-11-2 000

Sent to

Sir.

Sub: Recognition of the Department of Rural Development Science -Arul Anandar College, Karumathur - as a centre for research leading to Ph.D., degree - reg.

Ref: 1. Your letter dated 28-10-1999

- 2. Your letter dated 23-02-2000 enclosing a Demand Dwaft (TMBank, Madurai-19) for the remittance of the recognition fee (Rs.5250) &
- 3. Your letter dated 13-03-2000.

.

The Syndicate at its meeting held on 28-10-2000 considered the report of the Inspection Commission appointed to inspect and report on the fitness of the P.G. Department of Rural Development Science of Arul Anandar College, Karumathur-625 514 as a centre for research leading to Ph.D., degree in Rural Development Science and resolved that the P.G. Department of Rural Development Science of Arul Anandar College, Karumathur-625 514 be recognised as centre for research leading to Ph.D., degree in Rural Development Science with a condition that a separate room magnetic should be provided for holding group discussions and housing theses, research books and journals.

11/3x

Kindly acknowledge receipt.

Yours faithfully,

REGISTRAR 1/c

Copy to:

1. The Principal, Arul Anandar College, Karumathur

2. The Head and Co-ordinator, School of Economics, MKUNIVERSITY

3. Affiliation Section

4. College Development Section

தொகைபேசி என்ற: 858471 முதல் 958475 வரை

தந்தி: பல்கலைக்கழகம் தொலை அச்சு: 445-308 ம.கா. ப. உள்ளே

மதுரை காமராசர் பல்கலைக்கழகம்

சுனுப்புநர்

Thiru K. Chidambaram, Registrar 1/c மதுரை காமராசர் பல்கலைக்கழகம். பல்கலைநகர், மதுரை-625 021 பெறுநர்

The Principal
arul Anandar College (Autonomous)
Karumathur - 625 514
Madurai Districto

(தயவு செய்து பார்வை எண்ணைக் கூறிக்கவும்) என் R. 3/MKU/Recog. cf Dept./Eco/'01/63.

0年 06-06-2001

Sir

Sub: Recognition of the Department of Economics , Arul Anandar College(Auto Karumathur - as a centre for research leading to Ph.D degree - reg.

Ref: 1. Your letter dated 07-09-2000 enclosing a Demand Draft for the remittance of the affiliation fee Rs.5000/- &

13 6 2001. 2. Your letter dated 25-09-2000 enclosing a Demand Draft for the remittance of the balance affiliation fee Rs. 250/-.

The Syndicate at its meeting held on 21-05-2001 considered the report of the Inspection Commission appointed to inspect and report on the fitness of the Department of Economics, Arul Anandar College, Karumathur -625 514 as a centre for research leading to Ph.D., degree in Economics and resolved that the Department of Economics, Arul Anandar College, Karumathur-625 514 be recognised as a centre for research leading to Ph.D., degree in Economics.

Kindly acknowledge receipt.

Copy to:

1. College Development Section/FAU &

2. Affiliation Section/MKU.

7).

71409

Sh



MADURAI KAMARAJ UNIVERSITY

(University with Potential for Excellence)

Phone off: +91 452 2458471 Fax: +91 452 2459181 email.:mkuregistrar@rediffmail.com

Dr. K. Pitchumani M.Sc., Ph.D., REGISTRAR -in-Charge

Palkalai Nagar, Madurai - 625 021.

R1/Ph.D/Centre Recognition/Physics/11

Date: 14-06-2013.

To

The Principal Arul Anandar College (Autonomous) Karumathur – 625 514 Madurai Dist.

Sir/Madam,

Sub.: Recognition of Department of Physics as a

Research Centre leading to Ph.D. Degree - reg.

Ref.: Minutes of the meeting of the Syndicate dated 30-05-2013.

I am by direction to inform you that the *Department of Physics* of your college is recognized as one of the *Research Centres of this University* leading to Ph.D. Degree in *Physics*.

Yours faithfully,

REGISTRAR.

13/6/13

#X

Rev. Dr. GODWIN RUFUS, S.J.

Principal

M.A., M.Phil., Ph.D.,



ARUL ANANDAR COLLEGE

(AUTONOMOUS) Karumathur - 625 514. Madurai Dt. Tamil Nadu.

12.04.2021

From

The Principal,

Arul Anandar College (Autonomous),

Karumathur.

To

The Registrar,

Madurai Kamaraj University,

Madurai.

Respected Sir/Madam,

Sub: Proposal - Request for Recognition of Research Department - Reg.

Greetings from Arul Anandar College.

With gratitude I acknowledge your sincere effort in encouraging genuine research in the affiliated colleges. We would like to make use of your support in elevating the Department of Philosophy to a Research Centre under Madurai Kamaraj University.

The Department of Philosophy was established in the year 1970 with the introduction of the three year UG programme under aided stream. It was upgraded to a Post Graduate department in 1986. The department functions with nine faculties among them two are approved research supervisors of Madurai Kamaraj University. Seven members of the staff are PhD holders.

Here with I submit the proposal of the department of Philosophy for the recognition of the department as a research centre under Madurai Kamaraj University for catering the research endeavours in our college. The following annexures are enclosed for your kind perusal. I look forward for your favourable response.

Thanking you,

Yours faithfully,

PRINCIPAL

Enclosures:

Annexure I: Department Profile

Annexure II: Research Supervisors Details

Annexure III: Resources Available.

Annexure IV: Recent Publications

Tel: 04549 - 287880, 287221 Fax: +91-4549-287208, Mobile: +91-94863 79272 Email: godwinrufy@gmail.com Website: www.aactni.edu.in

Rev. Dr. GODWIN RUFUS, S.J.

Principal

M.A., M.Phil., Ph.D.,



ARUL ANANDAR COLLEGE

(AUTONOMOUS) Karumathur - 625 514. Madurai Dt. Tamil Nadu.

12.04.2021

From

The Principal,

Arul Anandar College (Autonomous),

Karumathur.

To

The Registrar,

Madurai Kamaraj University,

Madurai.

Respected Sir/Madam,

Sub: Proposal - Request for Recognition of Research Department- Reg.

Greetings from Arul Anandar College.

With gratitude I acknowledge your sincere effort in encouraging genuine research in the affiliated colleges. We would like to make use of your support in elevating the **Department of Mathematics** to a **Research Centre** under Madurai Kamaraj University.

The Department of Mathematics was established in the year 1970 with the introduction of the three year UG programme under aided stream in 1971. The college started the PG programme in Mathematics under self-finance stream in 2005. Three among the faculty from the aided stream are approved research supervisors of Madurai Kamaraj University. Seven members of the staff are PhD holders. Currently, the approved research supervisors are guiding eight research scholars registered under Madurai Kamaraj University.

Here with I submit the proposal of the department for the recognition of the department as research centre under Madurai Kamaraj University for catering the research endeavours in our college. The following annexures are enclosed for your kind perusal. I look forward for your favourable response.

Thanking you,

Yours faithfully,

PRINCIPAL

Enclosures:

Annexure I: Department Profile

Annexure II: Research Supervisors Details

Annexure III: Resources Available.

Annexure IV: Recent Publications

Tel: 04549 - 287880, 287221 Fax: +91-4549-287208, Mobile: +91-94863 79272

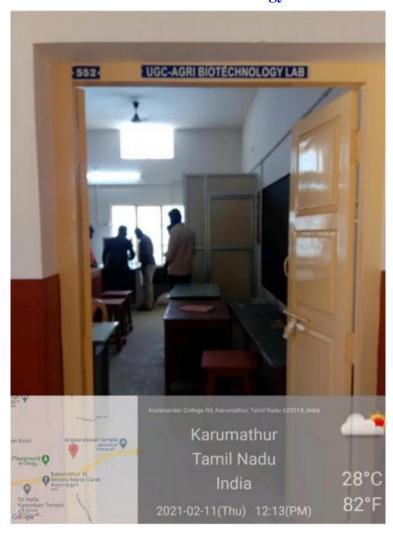
Email: godwinrufy@gmail.com Website: www.aactni.edu.in

Research Labs at AAC DST-FIST Lab





UGC – AGRI Biotechnology Lab



Chemistry Research Lab



Instrumental Facilities at AAC DST – FIST SCIENCE LAB





















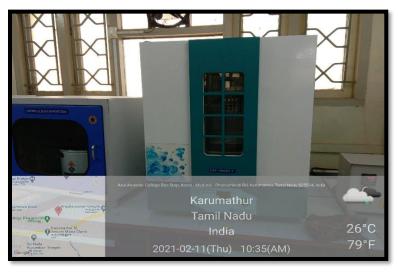




PHYSICS - RESEARCH LAB













CHEMISTRY - RESEARCH LAB











RURAL DEVELOPMENT SCIENCE – SOIL AND FODDER TESTING LAB











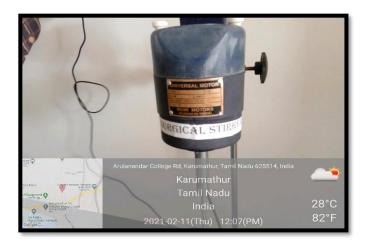


RURAL DEVELOPMENT SCIENCE - MICROBIOLOGY LAB













RURAL DEVELOPMENT SCIENCE – AGRICULTURAL BIOTECHNOLOGY LAB











FOOD ANALYSIS LAB



List of Research Projects (2016-21)

Rev. Dr. GODWIN RUFUS, S.J. M.A., M.Phil., Ph.D.,

Principal



ARUL ANANDAR COLLEGE

(AUTONOMOUS) Karumathur - 625 514. Madurai Dt. Tamil Nadu.

List of Teachers having research project from various funding agencies (2016-2021)

S. No	Name of the Principal Investigator/ Co Investigator (if applicable)	TITLE	Name of the Funding agency	Type (Government /Non- Government)	Department of Principal Investigator / Co Investigator	Year of Award	Duration of the project
1	Dr.K.S. Joseph	Design fabrication and analysis of nano composite based micro strip patch antenna	TNSCST	Government	Physics	05.12.2019	2 Years
	Wilson	Investigations of Nonlinear Interactions in Nanostructures.	UGC			01.07.2012	3 Years
2	Dr.S.P.Malarkannan	"Development and standardization Sarva Sura Kudineer Herbal Extract to treat unknown causes of viral infections - COVID - 19"	TNSCST	Government	RDS	05.12.2019	2 Years
		Impact of cultured lowfact synbiotic buttermilk supplementation on production performance of broiler	TNSCST / DST			04.05.2018	2 Years
3	Dr.M. James	An Analysis on Inclusiveness of Domestic Workers in Southern District of Tamil Nadu	UGC	Government	Economics	01.04.2013	2 Years
3	Antony	Role of Government in Inclusive Growth of Weaker Section in India	ICSSR	Government	Economics	29.12.2017	2 Years
4	Dr.A. Shanmugaraju	Investigations of coronal mass ejections from the sun, associated solar activities and their Geography-space consequences.	UGC	Government	Physics	01.04.2013	3 Years
5	Dr.M. George Joseph	An Ethnomethodological Enquiry into the Principles of a Harmonious Society with Special Reference to Madurai as a Model	UGC	Government	Philosophy	30.06.2017	2 Years
6	Dr.S. Valanarasu	Fabrication and Characterization of SnS/ n-Type Buffer Layers for Solar Cell Application	DST (SERB)	Government	Physics	01.09.2014	3 Years
7	Dr.N. Savitha Devi	Multicomponent Domino Reactions in the synthesis of heterocycles and carbocycles	DST (SERB)	Government	Chemistry	27.08.2013	3 Years





List of Research Guides (2016-21)

Rev. Dr. GODWIN RUFUS, S.J.

Principal



ARUL ANANDAR COLLEGE

(AUTONOMOUS) Karumathur - 625 514. Madurai Dt. Tamil Nadu.

List of Recognized Research Guides at Arul Anandar College 2016-2021

S.No	Department	Guide	Designation	Guide Reg. No	App. Date	University
1	Tamil	Dr. A. Joseph Charlie Arockia Doss	Assistant Professor	1316	03.10.2013	MKU, Madurai
2	Tamil	Dr. S. Ganesh	Assistant Professor	1671	07.11.2017	MKU, Madurai
3	Tamil	Dr. G. Gurusamy	Assistant Professor	1826	29.12.2017	MKU, Madurai
4	Tamil	Dr. M. Anbarasu	Assistant Professor	2124	31.08.2021	MKU, Madurai
5	English	Dr. S. Jesurajan	Associate Professor	1756	07.11.2017	MKU, Madurai
6	English	Dr. C. Mary Lowrencia	Assistant Professor	1983	03.07.2020	MKU, Madurai
7	Philosophy	Dr. S. Lourunathan	Associate Professor	Ŧ	12.03.2003	MKU, Madurai
8	Philosophy	Dr. M. George Joseph	Associate Professor	1244	17.04.2012	MKU, Madurai
9	Philosophy	Dr. S. Basil Xavier	Assistant Professor	1702	07.11.2017	MKU, Madurai
10	Maths	Dr. G. Ramkumar	Assistant Professor	1864	09.02.2018	MKU, Madurai
П	Maths	Dr. Nivetha Martin	Assistant Professor	1919	03.09.2018	MKU, Madurai
12	Maths	Dr. M. Gilbert Rani	Assistant Professor	1920	03.09.2018	MKU, Madurai
13	Chemistry	Dr. S. Martin	Assistant Professor	1719	07.11.2017	MKU, Madurai
14	Chemistry	Dr. N. Savitha Devi	Assistant Professor	2054	31.08.2021	MKU, Madurai
15	Physics	Dr. Michael Anjello Jothirajan	Associate Professor	1292	07.05.2013	MKU, Madurai
16	Physics	Dr. I. Kulandaisamy	Associate Professor	1370	12.09.2014	MKU, Madurai
17	Physics	Dr. A. Shanmugaraju	Assistant Professor	982	24.07.2009	MKU, Madurai
18	Physics	Dr. K. S. Joseph Wilson	Associate Professor	1216	03.11.2011	MKU, Madurai
19	Physics	Dr. S. Valanarasu	Assistant Professor	1372	12.09.2014	MKU, Madurai
20	RDS	Dr. Ambudoss Arvind	Associate Professor	1278	03.01.2013	MKU, Madurai

Rev. Dr. GODWIN RUFUS, S.J.

Principal



ARUL ANANDAR COLLEGE

(AUTONOMOUS) Karumathur - 625 514, Madurai Dt. Tamil Nadu.

21	RDS	Dr. L. Arockiaraj	Associate Professor	1325	04.12.2013	MKU, Madurai
22	RDS	Dr. A. Sebastian Mahimairai	Assistant Professor	1779	11.12.2017	MKU, Madurai
23	RDS	Dr. S. Arul Prasad	Associate Professor	1780	11.12.2017	MKU, Madurai
24	RDS	Dr. A. Thomas William	Associate Professor	1781	11.12.2017	MKU, Madurai
25	RDS	Dr. A. Sundararaj	Associate Professor	1379	10.10.2014	MKU, Madurai
26	Economics	Dr. M. James Antony	Associate Professor	949	04.05.2009	MKU, Madurai
27	Economics	Dr. N. Murali	Associate Professor	-	26.04.2002	MKU, Madurai
28	Economics	Dr. M. Maria John Kennedy	Associate Professor	952	04.05.2009	MKU, Madurai
29	Economics	Dr. M. Joseph Selvaraj	Associate Professor	1237	06.02.2012	MKU, Madurai
30	History	Dr. R. Antony Paul Gnanasekar	Associate Professor	1022	08.02.2010	MKU, Madurai





List of Research Scholars doing Ph.D. at AAC

Rev. Dr. GODWIN RUFUS, S.J.

Principal



ARUL ANANDAR COLLEGE

(AUTONOMOUS) Karumathur - 625 514. Madurai Dt. Tamil Nadu.

List of Scholars doing PhD at Arul Anandar College, Karumathur

				Tamil			
S.No	Departm ent	Name of the Supervisor	Name of the Ph.D Scholar with Photo ID	Mode of Ph.D (Full time. part time)	Reg. No	Date of Reg.	Research Topic
1	Tamil	Dr.A.Joseph Charlie Arockia Doss	Mr.P.Murugan	Part Time	P3632	20.08.2014	சேரன் கவிதைகளில் தமிழீழச்சமூகவியல்
2	Tamil	Dr.A.Joseph Charlie Arockia Doss	Mr.T.Nirmal Karnakaran	Part Time	P3679	14.11.2014	குழந்தைகளின் தாய்மொழித்திறனை மேம்படுத்துவதில் குழந்தை இலக்கியத்தின் பங்கு
3	Tamil	Dr.A.Joseph Charlie Arockia Doss	Mr.V.Elangovan	Part Time	P3982	04.08.2015	நவீனத் தமிழ் கவிதைகளில் கிறித்தவ தொன்மங்களும் மறு வாசிப்பும்
4	Tamil	Dr.A.Joseph Charlie Arockia Doss	Mr.K.Karunanid hi	Part Time	P4171	16.10.2015	நவீன நாடகங்களில் மரபுகளும் மாற்று மரபுகளும்
5	Tamil	Dr.A.Joseph Charlie Arockia Doss	Mr.G.Senthilku mar	Part Time	P4182	03.11.2015	தேனி மாவட்டத்தில் பழங்குடியினரின் வாய்மொழி வழக்காறும் வரலாறும்
6	Tamil	Dr.A.Joseph Charlie Arockia Doss	Mr.M.Munisamy	Part Time	P4197	05.01.2016	தமிழ்ச் செவ்வியல் இலக்கியங்களில் வேதச் சிந்தனைகளும் வேத மறுப்புச் சிந்தனைகளும்
7	Tamil	Dr.A.Joseph Charlie Arockia Doss	Mr.J.Princes Golda	Part Time	P4196	05.01.2016	ஈழப் போரட்டம் தொடர்பான புதினங்கள் (படைப்பாளிகளின் சமூக அரசியல் மற்றும் அழகிய குறித்த ஆய்வு)
8	Tamil	Dr.S. Ganesh	Ms.Rukkumani	Part Time	P5333	28.07.2018	சிலப்பதிகாரத்தில் கவின்கலை மற்றும் கட்டிடக்கலை ஓர் ஆய்வு
9	Tamil	Dr.S. Ganesh	Mrs.P.Makeshw ari	Part Time	P5476	06.10.2018	சமணக் காப்பியங்களில் பறவைகள்
10	Tamil	Dr.S. Ganesh	Mr.T.Rajarajan	Part Time	P5477	06.10.2018	கா.சிவத்தம்பியின் திறனாய்வுகளில் மார்க்சியம்
11	Tamil	Dr.G. Gurusamy	Mr.R.Manikand an	Part Time	P5922	20.11.2019	"தமிழ்ச் சிற்றிலயங்களில் நிலமும் அரசியலும்"
2	Tamil	Dr.G. Gurusamy	Mr.S.Vijay	Part Time	P6001	27.02.2020	"தமிழ்க் கவிதைகளில் நவீன முதலாளித்துவப் பதிவுகள்"

Rev. Dr. GODWIN RUFUS, S.J. M.A., M.Phil., Ph.D.,

Principal



ARUL ANANDAR COLLEGE

(AUTONOMOUS) Karumathur - 625 514. Madurai Dt. Tamil Nadu.

				English			
13	English	Dr.S.Jesurajan	Ms.S.Sumathi	Part time	P5363	16.08.2018	Reimaging womanhood in select novels of anita nair from feministic perspective
14	English	Dr.S.Jesurajan	Mr.J.Keba Immanuvel	Part time	P5449.	06.10.2018	Ambivalent Representations of contemporary Indian society in the Fiction of Aravind Adiga
15	English	Dr.S.Jesurajan	Ms.S.Jayaprabha	Part time	P5450	06.10.2018	Existential struggle in life situation of women in the novels of Namita Gokhale
16	English	Dr.S.Jesurajan	Mr.M.Saravana pandi	Part time	P5579	27.11.2018	Exploring postmodern ideologies in the novels of amit chaudhuri
17	English	Dr.S.Jesurajan	Mr.I.Amal Raj	Part time	P5702	15.12.2018	Cultural domination and modes of resistance: A postcolonial study of the novels of Upamanyu Chatterjee
				Economic	es		
18	Economics	Dr.M.Maria John Kennedy	R.Sridevi Kumari	Full Time	F9378	14.08.2014	Economic Growth in Tamil Nadu A turn Around in Economic Reforms Since 1991
19	Economics	Dr.M.Maria John Kennedy	Ms.M.Radhika	Part Time	P3832	24.02.2015	An Analysis of population growth and its impact on Development in Tamil Nadu
20	Economics	Dr.M.Maria John Kennedy	Ms.Anna Rony	Part Time	P5110	05.01.2018	"An Assessment of economic reforms in India Since 1990-91"
21	Economics	Dr.M.Maria John Kennedy	Mr.M.Chandran	Full Time	F10009	23.02.2018	"Impact of Economic Reform on Fiscal Discipline in India"
22	Economics	Dr.M.Maria John Kennedy	Mrs.S.Henri Rita Mary	Part Time	P5326	28.07.2018	"An analysis of economic reforms and its impact on external sector in India"
				Philosoph	y		
23	Philosophy	Dr.S.Lourdunat han	John J. Jesudasan	Part time	9321	07.09.2015	The Ethics of Personhood Contextualizing Casteism in Tamil Nadu Church
24	Philosophy	Dr.S.Lourdunat han	Xavier Lawrence	Part time	9432	25.06.2011	Politics of Democracy and Democratic Politics: Neighborhood Community Intervention Strategies
25	Philosophy	Dr.S.Lourdunat han	H.Lourduraj	Part time	P9363	25.06.2012	EVR Periyar on social exclusion, social capital and development
26	Philosophy	Dr. George Joseph M	Mr.Bemiyan Francis	Part time	P5241	06.03.2018	"Aristotle and Kant on the Moral Disposition of Action: A Critical

Rev. Dr. GODWIN RUFUS, S.J. M.A., M.Phil.,Ph.D.,

Principal

ARUL ANANDAR COLLEGE

(AUTONOMOUS) Karumathur - 625 514. Madurai Dt. Tamil Nadu.

		(6)	*	Maths			N (4) (2) (2) (4)
27	Maths	Dr.G.Ramkumar	Mrs.M.Vijasankri	Part time	P5548	06.10.2018	"A study on topological and ideal topological notions"
28	Maths	Dr.G.Ramkumar	Mrs. K. Kavitha	Part time	P5549	06.10.2018	"An ideal topological view of study on new classes of functions"
29	Maths	Dr.G.Ramkumar	Mr.M.Jegadeesa n	Part time	P5600	27.11.2018	"A Bitopological study of new generalized closed sets"
30	Maths	Dr.M.Gilbert Rani	Mr.A.Gnana Arockiam	Part time	P5638	15.12.2018	"A Study on ^p - Closed sets in soft Topological space"
31	Maths	Dr.M.Gilbert Rani	Ms.D.Abinaya	Part time	P5982	05.02.2020	"A Study on Binary √-open sets in binary ideal topological spaces"
32	Maths	Dr.Nivetha Martin	Ms.R.Priya	Part time	P5888	15.11.2019	"A Study on Various modeling methodologies of Fuzzy cognitive Maps"
33	Maths	Dr.Nivetha Martin	Mr.M.Kasi Mayan	Part time	P5898	20.11.2020	"Economic and environmental oriental inventory models with customer centric strategies and cost Parameters"
34	Maths	Dr.Nivetha Martin	Miss. S.Sudha	Part time	P9953	07.01.2021	Fuzzy Models-Extension of Plithogenic Sets in Multi Criteria Decision Making
				Chemistr	y		e Programme
35	Chemistry	Dr.S.Martin	Ms.J.Caroline Jancy Rani	Part Time	P5519	06.10.2018	"Kinetic studies on carbonyl compounds cobaloximes"
				Physics			
36	Physics	Dr.M.A.Jothiraj an (Rtd)	S.M.Sathiya	Full Time	F9295	22.04.2014	A comparative study on Antimicrobial activity of polymer assisted synthesis /Assembly of some metal oxides nanoparticle
37	Physics	Dr.M.A.Jothiraj an (Rtd)	S.Maria Dhivya	Full Time	P9394	25.08.2014	Investigations of electrospun chitosan based nanofibres for biomedical applications
38	Physics	Dr.K.S.Joseph Wilson	R.Mahalakshmi	Full Time	F9631	19.12.2015	Studies of novel perovskite for optical and acoustical Applications

Rev. Dr. GODWIN RUFUS, S.J. M.A., M.Phil.,Ph.D.,

Principal



ARUL ANANDAR COLLEGE

(AUTONOMOUS) Karumathur - 625 514. Madurai Dt. Tamil Nadu.

52	RDS	Dr.Thomas William	Mr.E.R.Babu	Part time	P5680	15.12.2018	"Prevalence & Management of Hepatitis C Virus (HCV) among key Population in Punjab and Manipur states India"
51	RDS	Dr.L.Arockiaraj	Mr.M.Kannan	Part time	P4223	23.04.2015 19.12.2015	Study on Development of Pontry farming & famil farmers
				RDS	T ₂		
50	Physics	Dr.S.Valanarasu	Mr.S.L.Jenish	Full Time	10207	30.04.2021	Fabrication and Characterization of Semiconducting thin films for Photo detector applications
49	Physics	Dr.S.Valanarasu	Mr.S.Sathish Kumar	Full Time	F9930	24.11.2020	Fabrication and Characterization of Semiconducting thin films for Photo detector applications
48	Physics	Dr.S.Valanarasu	Mr.I.Loyola Poul Raj	Part Time	P5464	06.10.2018	"Studies on rare earth doped nickel oxide thin films for sensor applications"
47	Physics	Dr.S.Valanarasu	Mr.T.Gnana sekar	Part Time	P5426	06.10.2018	"Fabrication of copper oxide thin films using different techniques and application in photocatalytic remediation of waste water"
46	Physics	Dr.A.Shanmuga raju	Ms.P.Vijayalaks hmi	Full Time	F10263	26.12.2019	Investigation on some solar and coronal features and their interplanetary effects"
45	Physics	Dr.A.Shanmuga raju	P.Pappa Kalaivani	Part Time	P4262	21.01.2016	Study on some characteristics of radio-loud CMEs associated with solar flares and radio bursts
44	Physics	Dr.A.Shanmuga raju	V.Manoj	Part Time	P9034	04.08.2010	Investigation of coronal mass ejections and their associated activities
43	Physics	Dr.K.S.Joseph Wilson	Ms.J.R.Sofia	Full Time		15.09.2020	Investigations on Photonic crysta based solar cell integrated with energy storage system
42	Physics	Dr.K.S.Joseph Wilson	Ms.V.Buvanesw ari	Part Time	P6012	19.05.2020	Investigation on Light harvesting Materials for Optical Application
41	Physics	Dr.K.S.Joseph Wilson	Sr.P.Arockia Michael Mercy	Part Time	P5766	15.02.2019	"Tuning of the optical properties of semiconductor materials"
40	Physics	Dr.K.S.Joseph Wilson	Mr.K.Poovendr an	Part Time	P5044	29.05.2017	"Synthesis and Charactrisation of sime metals doped hydroxyapatite"
39	Physics	Dr.K.S.Joseph Wilson	M.Ismail Fathima	Full Time	F9767	03.09.2016	Investigation on the theory of Photonic crystal based solar cell

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ARUL ANANDAR COLLEGE (AUTONOMOUS) Karumathur - 625 514. Madurai Dt. Tamil Nadu.

53	RDS	Dr.Thomas William	Mr.S.Lawrence	Part time	P5806	15.05.2019	"Psychological well-being and social support system among the SHG women in southern districts of Tamil Nadu"
54	RDS	Dr.Thomas William	Mr.P.Paulraj	Part time	P5941	26.06.2019	"Community Engagement and impact of corporate social Responsibility projects in Tirunelveli District"
55	RDS	Dr.Thomas William	Ms.K.Indira	Full Time	P6079	03.07.2020	"Study on smartphone usage among adolescents in Madurai city"
56	RDS	Dr.S.Arul Prasad	Fr.J.Densingh Rajan	Part time	P5681	15.12.2018	"Contributions of Migrants towards development in their native place (Ramanathapuram District)"
57	RDS	Dr.S.Arul Prasad	Mr.N.Thanga Pandi	Part time	P5902	25.10.2019	"Impact of Migration of Adult Children on Rural Elderly Parents"
58	RDS	Dr.S.Arul Prasad	Mr.S.Jayaseelan	Part time	P6064	25.06.2020	"A Study on the contribution of Jusuits towards empowerment of marginalized women in Tamil Nadu"
59	RDS	Rev.Dr.A.Sebas tian Mahimairaj	Ms.R.Amirtham	Full Time	F9912	19.12.2017	"Physical and psychosocial impact of hysterectomy (Uterus Removel) among women in Madurai District, Tamil Nadu: An empirical study"
60	RDS	Rev.Dr.A.Sebas tian Mahimairaj	Ms.Sunitha Evelyn Christy	Part time	P5259	02.02.2018	"A Study on working life balance among working women in banking sector in Maduria District"
61	RDS	Rev.Dr.A.Sebas tian Mahimairaj	Mr.L.Joe	Part time	P9980	07.01.2021	A comparative study of the organizational factors affecting the role efficacy of the employees in selected manufacturing and it (Information technology) industries in Bangalore, India





List of Scholars awarded with Ph.D. during 2016-21

Rev. Dr. GODWIN RUFUS, S.J. M.A., M.Phil.,Ph.D.,

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ARUL ANANDAR COLLEGE

(AUTONOMOUS) Karumathur - 625 514. Madurai Dt. Tamil Nadu.

List of Scholars awarded with PhD at Arul Anandar College doing (2016-2021)

				Awar	ded			
S.No	Departme nt	Name of the Supervisor	Name of the Ph.D Scholar	Mode of Ph.D (Full Time/Part Time	Reg. No	Date of Reg.	Research Topic	Award Date
1	History	Dr.R.Antony Paul Gnana Sekar	Ms.J.Saral Evangelin	Part Time	P9077	08.09.2010	"Christian Women Missionaries and the Empowerment of Women in Madurai (19th and early 20th Centries)".	16.11.2010
2	Economics	Dr.S.Michael John Peter	R.Boomadevi	Part Time	P8465	20.07.2009	An Economic Study of Women in Informal Sector in Madurai District	03.04.2017
3	Economics	Dr.N.Murali	R.Rajah	Full Time	F9336	25.04.2011	An Analysis of Industrial Development in Tamil Nadu	15.05.2017
4	Economics	Dr.M.Maria John Kennedy	Ms.R.Suji Karthika	Full Time	F8912	2016	"An economic analysis of foreign exchange reserves in India"	17.05.201
5	Economics	Dr.M.Maria John Kennedy	A.Alphonsa Nirmala Mary	Part Time	P9175	09.11.2010	Development of Entrepreneurial Skill Through SHGs in Virudhunagar District	19.05.2017
6	Economics	Dr.K.Alamar (Rtd)	M.Balakumar	Part Time	P9102	20.09.2011	An Analysis of Various Tax and Non-Tax Revenue of Tamil Nadu State Government since 1980	26.05.2017
7	Economics	Dr.James Antony (Rtd)	G.Kulothunga Raja Poopathi	Full Time	F8426	16.06.2010	A Comparative study of Participation of Women Workers in Organized and Unorganized sector in Madurai District	21.08.2017
8	Economics	Dr.M.Joseph Selvaraj	V.Thangamay an	Full Time	F8980	03.10.2012	An Economic Impact of the welfare Programmes for the Rehabilitation of Disabled Persons in Tamil Nadu with Special Reference to Madurai District	13.09.201

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ARUL ANANDAR COLLEGE

(AUTONOMOUS) Karumathur - 625 514. Madurai Dt. Tamil Nadu.

9	Physics	Dr.K.S.Joseph Wilson	Mrs.V.Revathy	Part Time	F9141	20.08.2013	"Study of Non-Linear optical Effects in Nanostructures"	27.09.2017
10	Philosophy	Dr.S.Lourdunathan	H.Lourduraj	Part time	P9363	25.06.2012	EVR Periyar on social exclusion, social capital and development	28.09.2017
11	Philosophy	Dr.S.Lourdunathan	Suresh Thomas	Part time	P9430	25.06.2011	Marceline and Levinasian Philosophy of the Other for the affirmation of the other	13.10.2017
12	Phy.Edu	Dr.J.Sathiah	Mr.G.Peter Michael Raj	Part time	P9530	2015	"Psychological characteristics of physcial education professional students excelling in academic, sports and in Both"	31.10.2017
13	Economic s	Dr.K.Alamar (Rtd)	A.Pandiamm al	Full Time	F8453	16.07.2010	An Analysis of Foreign Capital Flows in India since 1990's	22.11.2017
14	Physics	Dr.A.Shanmugara ju	Mr.S.Prasan na Subramanian	Part Time	P9043	05.02.2010	"Investigation on Solar Flares, CMES and Radio Bursts	30.11.2017
15	Physics	Dr.M.A.Jothi Rajan	St.G.Jenita Rani	Full Time	F9168	2016	"Investigation on the Catalytic Activities of Graphene Based Nanostructures"	20.12.2017
16	Economic s	Dr.M.Joseph Selvaraj	Mr.S.Sundar apandi	Full Time	F8968	20.09.2012	An Economic study of Women Entrepreneurs of Micro Industrial units of Tamil Nadu with special Reference to Theni District	19.01.2018
17	Physics	Dr.A.Shanmugara ju	Mr.M.Bendi ct Lawrance	Part Time	P8181	23.10.2008	Investigation of coronal mass ejections from the sun and their effects	10.02.2018
18	History	Dr.R.Antony Paul Gnana Sekar(Rtd)	Mr.S.Boobal an Dominic Victor	Part Time	P9311	2010	"The Upliftment Works of the Missionaries of the Congregation of the Sacred Heart of Jesus Towards the Poor and the Unreached	17.04.2018
19	Physics	Dr.K.S.Joseph Wilson	Mrs.A.Malar kodi	Part Time	P9712	09.02.2012	Optical studies of Ferroelectric crystals	04.05.201
20	Physics	Dr.K.S.Joseph Wilson	Mr.N.R.Ram anujam	Part Time	P3268	23.08.2013	"Properties of certain photonic crystal under external perturbation"	22.06.201
21	Economic	Dr.M.Maria John Kennedy	V.Revathi	Full Time	F8689	05.07.2011	Selected Fiscal Parameters of the Government of India Since 1990-1991	04.07.201

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22	Economic s	Dr.M.Joseph Selvaraj	P.Muneeswa ran	Full Time	F8913	30.02.2012	An Economic Impact of Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGEA) on Schedule Caste Poor in Dindugul District	19.07.2018
23	Economic s	Dr.M.Maria John Kennedy	S.Arockia Sarvia	Full Time	F8924	08.06.2011	An Economic Analysis of Tourism in Rameswaram, Ramanathpuram District	19.09.2018
24	Economic s	Dr.N.Murali	A.Satheesh Babu	Part Time	P9677	06.02.2012	An Economics Study of Production & Distribution of Food grains in Tamil Nadu since 1985	22.10.2018
25	Physics	Dr.S.Valanarasu	K.Deva Arun Kumar	Full Time	F9698	18.03.2016	Preparation and characterization of doped metal oxide thin films for optoelectronic applications	11.12.2018
26	Physics	Dr.A.Shanmugara ju	Syed Ibrahim	Full Time	F9206	30.10.2013	Investigations of solar eruptive events and their effects	18.12.2018
27	Physics	Dr.S.Valanarasu	R.David Prabu	Full Time	F9604	19.12.2015	Studies on properties on Copper oxide thin films for photovoltaic applications	21.01.2019
28	Economic s	Dr.M.Joseph Selvaraj	R.Niruban Chakravarthi	Part Time	P3094	26.03.2013	An Economic Analysis of the Beneficiaries of Health related programmes in Tamil Nadu with special reference to Theni District	21.05.2019
29	Physics	Dr.M.A.Jothirajan (Rtd)	B.Prakash	Part Time	P8182	30.10.2013	Investigations on bio- polymers for some medical applications	23.07.2019
30	Physics	Dr.M.A.Jothirajan (Rtd)	G.Vanithaku mari	Full Time	F9196	04.11.2013	Investigations of Bio- polymer matal nano particle complexes for bio medical Englineering Application	23.07.2019
31	Physics	Dr.M.A.Jothirajan (Rtd)	M.Earnest Stephen Gnanadoss	Part Time	P8177	30.01.2014	Investigations of metal oxides and metal sulphide nanoparticles	24.07.2019
32	Physics	Dr.A.Shanmugara	K.Suresh	Part Time	P9737	16.03.2012	Investigations of coronal and interplanetary shocks	20.08.2019
33	Physics	Dr.S.Valanarasu	A.Maria Susai Arulanantha m	Full Time	F9603	19.12.2015	Investigations on semiconducting tin sulphide thin films for solar cell applications	23.01.202

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ARUL ANANDAR COLLEGE

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34	Physics	Dr.I.Kulandaisam y	S.Sebastian	Part Time	P3868	12.05.2015	Synthesis and characterisation of SnS thin films for solar cell applications	28.01.2020
35	Physics	Dr.M.A.Jothirajan (Rtd)	S.Asha	Full Time	F9289	05.03.2013	Investigations on Biomineralisation of nano hydroxapotite intercalated biopolymeric systems	07.08.2020
36	Physics	Dr.I.Kulandaisam y	S.Santhosh Kumar Jacob	Part Time	P3869	12.05.2015	Synthesis and Characterisation of Cu2O based solar cell using spray pyrolysis method	12.08.2020
37	Physics	Dr.I.Kulandaisam	S.Rex Rosario	Part Time	P4229	19.12.2015	Deposition and Characterization of semiconducting thin films for photo voltaic applications	13.08.2020
38	Physics	Dr.A.Shanmugara ju	G.Selvarani	Part Time	P3482	03.04.2014	Investigations of solar activities and their associations using multiwavelength observations	05.10.2020
39	Physics	Dr.K.S.Joseph Wilson	V.Donipon	Full Time	F9633	19.12.2015	Investigation of metal nano composites for optical applications	26.12.2020
40	Physics	Dr.K.S.Joseph Wilson	N.Abirami	Full Time	F9766	03.09.2016	Analysis of magneto- optical propoerties of Photonic crystal	26.12.2020





List of Scholars registered during 2016-2021

Rev. Dr. GODWIN RUFUS, S.J.

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(AUTONOMOUS) Karumathur - 625 514. Madurai Dt. Tamil Nadu.

List of Scholars registered for PhD at Arul Anandar College, Karumathur (2016-2021)

S.No	Departme nt	Name of the Supervisor	Name of the Ph.D Scholar	Mode of Ph.D (Full time. part time)	Reg. No	Date of Reg.	Research Topic
				2020-21			
1	RDS	Dr.Thomas William	Ms.K.Indira	Part Time	P6079	03.07.2020	"Study on smartphone usage among adolescents in Madurai city"
2	Physics	Dr.S.Valanarasu	Mr.S.Sathish Kumar	Full Time	F9930	24.11.2020	Fabrication and Characterization of Semiconducting thin films for Photo detector applications
3	Maths	Dr.Nivetha Martin	Miss. S.Sudha	Part time	P9953	07.01.2021	Fuzzy Models-Extension of plithogenic sets in multi griteria decision making
4	Physics	Dr.K.S.,Joseph Wilson	Ms. J R Sofia	Full Time	F9958	07.01.2021	Investigations on Photonic crysta based solar cell integrated with energy storage system
5	RDS	Fr. Sebastian Mahima Raj	Mr. Joe L	Part time	P9980	07.01.2021	A comparative study of the organizational factors affecting the role efficacy of the employees in selected manufacturing and it (Information technology) industries in Bangalore, India

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(AUTONOMOUS) Karumathur - 625 514. Madurai Dt. Tamil Nadu.

S.No	Departme nt	Name of the Supervisor	Name of the Ph.D Scholar	Mode of Ph.D (Full time, part time)	Reg. No	Date of Reg.	Research Topic
				2019-20	1		
6	RDS	Dr.Thomas William	Mr.P.Paulraj	Part time	P5941	26.06.2019	"Community Engagement and impact of corporate social Responsibility projects in Tirunelveli District"
7	RDS	Dr.S.Arul Prasad	Mr.N. Thanga Pandi	Part time	P5902	25.10.2019	"Impact of Migration of Adult Children on Rural Elderly Parents"
8	Maths	Dr.Nivetha Martin	Ms.R.Priya	Part time	P5888	15.11.2019	"A Study on Various modelling methodologies of Fuzzy cognitive Maps"
9	Tamil	Dr. G.Gurusamy	Mr.R.Manikandan	Part time	P5922	20.11.2019	"தமிழ்ச் சிற்றிலயங்களில் நிலமும் அரசியலும்"
10	Physics	Dr.A.Shanmugar aju	Ms.P.Vijayalakshmi	Full Time	F10263	26.12.2019	Investigation on some solar and coronal features and their interplanetary effects"
11	Maths	Dr.M.Gilbert Rani	Ms.D.Abinaya	Part time	P5982	05.02.2020	"A Study on Binary √- open sets in binary ideal topological spaces"
12	Tamil	Dr. G.Gurusamy	Mr.S.Vijay	Part time	P6001	27.02.2020	"தமிழ்க் கவிதைகளில் நவீன முதலாளித்துவப் பதிவுகள்"
13	Physics	Dr.K.S.Joseph Wilson	Ms.V.Buvaneswari	Part Time	P6012	19.05.2020	Investigation on Light harvesting Materials for Optical Applications
14	RDS	Dr.S.Arul Prasad	Mr.S.Jayaseelan	Part time	P6064	25.06.2020	"A Study on the contribution of Jusuits towards empowerment of marginalized women in Tamil Nadu"
15	Maths	Dr.Nivetha Martin	Mr.M.Kasi Mayan	Part time	P5898	20.11.2020	"Economic and environmental oriental inventory models with customer centric strategies and cost Parameters"

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S.No	Department	Name of the Supervisor	Name of the Ph.D Scholar	Mode of Ph.D (Full time. part time)	Reg. No	Date of Reg.	Research Topic
		55		2018-19		-	
16	Philosophy	Dr. George Joseph M	Mr.Bemiyan Francis	Part time	P5241	06.03.2018	"Aristotle and Kant on the Moral Disposition of Action A Critical Enquiry"
17	Tamil	Dr.S.Ganesh	Ms.Rukkumani	Part time	P5333	28.07.2018	சிலப்பதிகாரத்தில் கவின்கலை மற்றும் கட்டிடக்கலை ஓர் ஆய்வு
18	Economics	Dr.M.Maria John Kennedy	Mrs.S.Henri Rita Mary	Part Time	P5326	28.07.2018	"An analysis of economic reforms and its impact on external sector in India"
19	English	Dr.S.Jesurajan	Ms.S.Sumathi	Part time	P5363	16.08.2018	Reimaging womanhood in select novels of anita nair from feministic perspective
20	Tamil	Dr.S. Ganesh	Mrs.P.Makeshw ari	Part time	P5476	06.10.2018	சமணக் காப்பியங்களில் பறவைகள்
21	Tamil	Dr.S. Ganesh	Mr.T.Rajarajan	Part time	P5477	06.10.2018	கா.சிவத்தம்பியின் திறனாய்வுகளில் மார்க்சியம்
22	English	Dr.S.Jesurajan	Mr.J.Keba Immanuvel	Part time	P5449	06.10.2018	Ambivalent Representations of contemporary Indian society in the Fiction of Aravind Adiga
23	English	Dr.S.Jesurajan	Ms.S.Jayaprabha	Part time	P5450	06.10.2018	Existential struggle in life situation of women in the novels of Namita Gokhale
24	Maths	Dr.G.Ramkumar	Mrs.M.Vijasankri	Part time	P5548	06.10.2018	"A study on topological and ideal topological notions"
25	Maths	Dr.G.Ramkumar	Mrs. K. Kavitha	Part time	P5549	06.10.2018	"An ideal topological view of study on new classes of functions"
26	Chemistry	Dr.S.Martin	Ms.J.Caroline Jancy Rani	Part Time	P5519	06.10.2018	"Kinetic studies on carbonyl compounds cobaloximes"
27	Physics	Dr.S.Valanarasu	Mr.I.Loyola Poul Raj	Part Time	P5464	06.10.2018	"Studies on rare earth doped nickel oxide thin films for sensor applications"

Rev. Dr. GODWIN RUFUS, S.J. M.A., M.Phil., Ph.D.,

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28	Physics	Dr.S.Valanarasu	Mr.T.Gnana sekar	Part Time	P5426	06.10.2018	"Fabrication of copper oxide thin films using different techniques and application in photocatalytic remediation of waste water"
29	English	Dr.S.Jesurajan	Mr.M.Saravanap andi	Part time	P5579	27.11.2018	Exploring postmodern ideologies in the novels of amit chaudhuri
30	Maths	Dr.G.Ramkumar	Mr.M.Jegadeesan	Part time	P5600	27.11.2018	"A Bitopological study of new generalized closed sets"
31	English	Dr.S.Jesurajan	Mr.I.Amal Raj	Part time	P5702	15.12.2018	Cultural domination and modes of resistance: A postcolonial study of the novels of Upamanyu Chatterjee
32	Maths	Dr.M.Gilbert Rani	Mr.A.Gnana Arockiam	Part time	P5638	15.12.2018	"A Study on ^p - Closed sets in soft Topological space"
33	RDS	Dr.Thomas William	Mr.E.R.Babu	Part time	P5680	15.12.2018	"Prevalence & Management of Hepatitis C Virus (HCV) among key Population in Punjab and Manipur states India"
34	RDS	Dr.S.Arul Prasad	Fr.J.Densingh Rajan	Part time	P5681	15.12.2018	"Contributions of Migrants towards development in their native place (Ramanathapuram District)"
35	Physics	Dr.K.S.Joseph Wilson	Sr.P.Arockia Michael Mercy	Part Time	P5766	15.02.2019	"Tuning of the optical properties of semiconductor materials"
36	RDS	Dr.Thomas William	Mr.S.Lawrence	Part time	P5806	15.05.2019	"Psychological well-being and social support system among the SHG women in southern districts of Tamil Nadu"

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S.No	Department	Name of the Supervisor	Name of the Ph.D Scholar	Mode of Ph.D (Full time. part time)	Reg. No	Date of Reg.	Research Topic
			201	17-18			1 8 22 _ 1
37	RDS	Rev.Dr.A.Sebastian Mahimairaj	Ms.R.Amirtham	Full Time	F9912	19.12.2017	"Physical and psychosocial impact of hysterectomy (Uterus Removel) among women in Madurai District, Tamil Nadu: An empirical study'
38	Economics	Dr.M.Maria John Kennedy	Ms.Anna Rony	Part Time	P5110	05.01.2018	"An Assessment of economic reforms in India Since 1990-91"
39	RDS	Rev.Dr.A.Sebastian Mahimairaj	Ms.Sunitha Evelyn Christy	Part time	P5259	02.02.2018	"A Study on working life balance among working women in banking sector in Maduria District"
40	Economics	Dr.M.Maria John Kennedy	Mr.M.Chandran	Full Time	F10009	23.02.2018	"Impact of Economic Reform on Fiscal Discipline in India"

S.No	Department	Name of the Supervisor	Name of the Ph.D Scholar	Mode of Ph.D (Full time. part time)	Reg. No	Date of Reg.	Research Topic
			20	016-17			
41	Physics	Dr.K.S. Joseph Wilson	Ms.N.Abirami	Full Time	F9766	03.09.2016	Analysis of magneto- optical propoerties of Photonic crystal
42	Physics	Dr.K.S. Joseph Wilson	Mrs.M.Ismail Fathima	Full Time	F9767	03.09.2016	Investigation on the theory of Photonic crysta based solar cells
43	Physics	Dr.K.S.Joseph Wilson	Mr.K.Poovendran	Part Time	P5044	29.05.2017	"Synthesis and Charactrisation of sime metals doped hydroxyapatite"





Research Publications – IQAC Newsletter



Arul Anandar College

(Affiliated to Madurai Kamaraj University and Reaccredited by NAAC at 'A' Grade with a CGPA of 3.66)
Karumathur - 625 514, Madurai. Tamil Nadu.



December 2018 • Issue No. 23





48th College day





49th Sports day





IN FOCUS

48th College Day Inauguration of Students' Council 49th Annual Sports Day

HIGHLIGHTS

Seminars Conferences Workshops

RESEARCH ACTIVITIES

Research Resource Sharing **Publications Paper Presentations** Participation

OTHERS

Staff Achievements **Department Activities** Students' Achievements **Staff Development Programmes**

EXTENSION ACTIVITIES

National Service Scheme National Cadet Corps Youth Red Cross ARISE Centre for Women's Studies Nature Club Rotaract **ACPR Foundation Course**

- 24. Dr. S. Arul Prasad, Associate Professor of Rural Development Science, was the External examiner in the field work Viva-Voce exam in MSW at Fatima College, Madurai on 24th October 2018.
- 25. Rev. Dr. A.Sebastian Mahimairaj, Assistant Professor of Rural Development Science, was the resource person for Soft Skills training for the students at Nirmala Institute of Technology, Manalikarai during 7th to 10th November 2018.
- 26. Dr. A. Shanmugaraju, Assistant Professor of Physics, presented a talk on Type II Radio Bursts, Coronal Mass Ejections and Geo effectiveness at Udaipur Solar Observatory, Physical Research Laboratory, Udaipur on 15th November 2018.
- 27. Ms. M. Pandeeswari, Assistant Professor of Rural Development Science, acted as an External expert in the Academic Audit at Women's Studies Centre, Madurai Kamaraj University, Madurai on 29th November 2018.
- 28. Dr. A. Thomas William, Dean and Associate Professor of Rural Development Science, attended a Board of Studies meeting at Tamil Council for Higher Education, Chennai on 30th November 2018.
- 29. Rev. Dr. S. Basil Xavier, Principal, led the session on The Way forward: Ideas and Prospects at Satya Nilayam, Chennai on 8th December 2018.

PUBLICATIONS

- 1. Dr. K.S. Joseph Wilson, Head and Associate Professor of Physics, published an article on "Analysis of Polariton Dispersion in Metal Nanocomposite Based Novel Superlattice System" in the journal of Results in Physics, ISSN: 2211-3797, UGC-10560 in April 2018. Publisher: Elsevier.
- 2. Dr. S. Valanarasu, Assistant Professor of Physics, published an article on "Effect of Neodymium doping on the Structural, Morphological, Optical and Electrical Properties of Copper Oxide Thin Films" in the Journal of Materials Science Materials in Electronics. ISSN: 0957-4522, UGC-24464 in April 2018. Publisher: **KLUWER**
- 3. Dr. S. Valanarasu, Assistant Professor of Physics, published an article on "Effect of Potential Voltages on key Functional Properties of Transparent AZO Thin Films Prepared by Electrochemical Deposition Method for Optoelectronic Applications" in the journal of

- Materials Research, ISSN: 0884 -2914, UGC-24458 in April 2018. Publisher: Cambridge.
- 4. Dr. S. Valanarasu, Assistant Professor of Physics, published an article on "Effect of Spray Pressure on Optical, Electrical and Solar Cell Efficiency of Novel Cu 2 O Thin Films" in the journal of Surface and Coatings Technology, ISSN: 0257-8972, UGC-22225 in April 2018. Publisher: Elsevier.
- 5. Rev. Dr. A. Sebastian Mahimairaj, Assistant Professor of Rural Development Science. published an article on "Industrial Accidents -A Hinderance to Progress in Industrial Safety" in the Interdisciplinary Research Journal for Humanities, Vol-9, No.2, ISSN:2249-250X in April 2018.
- 6. Dr. K.S. Joseph Wilson, Head and Associate Professor of Physics, published an article on "Enhanced Sensitivity of Cancer Cell Using One Dimensional Nano Composite Material Coated Photonic Crystal" in the journal of Microsystem Technologies, ISSN: 0946-7076, UGC-31202 in May 2018. Publisher: Springer Verlag.
- 7. Dr. A. Shanmugaraju, Assistant Professor of Physics, published an article on "Interplanetary Type II Radio Bursts and their Association with CMEs and Flares" in the journal of Astrophysics and Space Science, ISSN: 0004-640X, UGC:1409, in May 2018. Publisher: Springer.
- 8. Dr. S. Valanarasu, Assistant Professor of Physics, published an article on "Influence of Carrier Gas Pressure on Nebulizer Spray Deposited Tin Disulfide Thin Films" in the Journal of Materials Science Materials in Electronics, ISSN: 0957-4522, UGC-24464 in May 2018. Publisher: KLUWER.
- 9. Dr. S. Valanarasu, Assistant Professor of Physics, published an article on "Influence of Substrate Temperature on the Physical Properties of Sns2 Thin Films Prepared using Nebulized Spray Pyrolysis Technique" in the Journal of Materials Science Materials in Electronics, ISSN: 0957-4522, UGC-24464 in May 2018. Publisher: KLUWER.
- 10. Ms. R. Yoga Rani & Dr. Nivetha Martin, Assistant Professors of Mathematics, published an article on "Optimization of an Inventory Model Considering the Costs of Transportation and its Association Emission in Steel Industries" in the journal of Mathematical Archive, Vo.9, No.5, ISSN: 2229-5046 in May 2018.

- 11. Ms. W. Sahaya Thivya, Ms. J. Jenitha Sironmani & Dr. Nivetha Martin, Assistant Professors of Mathematics, published an article titled "Optimization of Unbalanced Trapezoidal Fuzzy Assignment Problem" in the journal of *Mathematical Archive*, Vo.9, No.5, ISSN: 2229-5046 in May 2018.
- 12. Dr. Nivetha Martin, Assistant Professor of Mathematics, published an article on "()-Cut of Intuitionistic Anti L-Fuzzy M-Subgroups" in the journal of *Mathematical Archive*, Vo.9, No.5, ISSN: 2229-5046 in May 2018.
- 13. Dr. Nivetha Martin, Assistant Professor of Mathematics, published an article on "Ranking the Problems of Women Entrepreneurs in India using Vikor Method with Lonsm" in the international journal of *Mathematics Trends* and *Technology*, pp.68-72, ISSN: 2231-5373, Publisher: Seventh sense research group in May 2018.
- 14. Dr. S. Valanarasu, Assistant Professor of Physics, published an article on "Transition Metal (Mn) and Rare Earth (Nd) Di-Doped Novel Zno Nanoparticles: A Facile Sol–Gel Synthesis and Characterization" in the Journal of *Materials Science Materials in Electronics*, ISSN: 0957-4522, UGC-24464 in June 2018. Publisher: KLUWER.
- 15. Dr. S. Valanarasu, Assistant Professor of Physics, published an article on "Solution Volume Effect on Structural, Optical and Photovoltaic Properties of Nebulizer Spray Deposited SnS Thin Films" in the Journal of *Materials Science Material in Electronics*, ISSN: 0957-4522, UGC-24464 in June 2018. Publisher: KLUWER.
- 16. Dr. S. Valanarasu, Assistant Professor of Physics, published an article on "Facile Synthesis and Characterization of Undoped, Mn Doped and Nd Co-Doped Cuo Nanoparticles for Optoelectronic and Magnetic Applications" in the Journal of *Molecular Structure*, ISSN: 0022-2860, UGC: 24702 in June 2018. Publisher: Elsevier.
- 17. Dr. M. Paramasivan, Assistant Professor of Tamil, Published an article on "அகநானூறு: உரை வேறுபாட்டுக் காரணிகள்" in the journal of மணந்கேணி. ISSN: 2249-9164 in June 2018.
- 18. Dr. K.S. Joseph Wilson, Head and Associate Professor of Physics, published an article on "Cancer Detection Using Metamaterial Biosensor in the Terahertz Regime" in the International Online Multidisciplinary Journal of Review of Research, ISSN: 2249-894X, UGC:

- 48514 in July 2018. Publisher: Lakshmi Book Publisher.
- 19. Dr. A. Shanmugaraju, Assistant Professor of Physics, published an article on "A Major Geoeffective CME from NOAA 12371: Initiation, CME-CME Interaction, and Interplanetary Consequences" in the journal of *Solar Physics*, ISSN: 0038-0938, UGC: 33285 in July 2018. Publisher: Springer.
- Mr. S. Pandikumar, Assistant Professor of Information Technology & Management, published an article on "Analysis of Radio Resource Energy Consumption Pattern in Cellular Network" in the International journal of *Computer Sciences and Engineering*, Vol.6, Issue-7, ISSN: 2347-2693, UGC-63193 in July 2018.
- 21. Mr. S. Pandikumar, Assistant Professor of Information Technology & Management, published an article on "Energy Efficient Developments of Smartphone Environment and Cellular Network-Opportunities and Challenges" in the International journal of Computer Sciences and Engineering, Vol.6, Issue-7, ISSN: 2347-2693, UGC-63193 in July 2018.
- 22. Dr. S. Valanarasu, Assistant Professor of Physics, published an article on "Effect of Deposition Temperature on Key Optoelectronic Properties of Electrodeposited Cuprous Oxide Thin Films" in the journal of *Optical and Quantum Electronics*, ISSN: 0306-8919, UGC -36505 in July 2018. Publisher: Springer.
- 23. Dr. S. Rayappan, Assistant Professor of Chemistry, published an article on "Picomolarlevel Electrochemical Detection of Thiocyanate in the Saliva Samples of Smokers and Non-Smokers of Tobacco using Carbon Dots Doped Fe₃O₄ Nanocomposite Embedded on g-C₃N₄ Nanosheets" in the journal of *Electrochimica* Acta, ISSN: 0013-4686, UGC: 13498 in July 2018, Publisher: Elsevier.
- 24. Mr. S. Pandikumar, Assistant Professor of Information Technology & Management, published an article on "A comprehensive Exploration of Smartphone Network Traffic and Application Wakeup Pattern" in the International journal of Scientific Research in Computer Science Application and Management Studies, Vol.7, Issue-4, ISSN: 2319-1953, UGC-63611 in July 2018.
- 25. Mr. S. Pandikumar, Assistant Professor of Information Technology & Management, published an article on "Analyse the Impact

- of Social Media in Higher Education" in the International journal of *Scientific Research in Computer Science Application and Management Studies*, Vol.7, Issue-4, ISSN: 2319-1953, UGC- 63611 in July 2018.
- 26. Dr. S. Valanarasu, Assistant Professor of Physics, published an article on "Influence of Tin Precursor Concentration on Physical Properties of Nebulized Spray Deposited Tin disulphide Thin Films" in the journal of Asian Ceramic Societies, ISSN: 2187-0764, UGC-47441 in 2018. Publisher: Elsevier.
- 27. Dr. S. Valanarasu, Assistant Professor of Physics, published an article on "Rare Earth Eu₃₊ Co-Doped AZO Thin Films Prepared by Nebulizer Spray Pyrolysis Technique for Optoelectronics" in the journal of *Sol-Gel Science and Technology*, ISSN: 0928 -0707, UGC-20511 in 2018. Publisher: Springer.
- 28. Dr. S. Valanarasu, Assistant Professor of Physics, published an article on "Effect of Solvent on the Key Properties of Al Doped Zno Films Prepared by Nebulized Spray Pyrolysis Technique" in the journal of *Materials Chemistry and Physics*, ISSN:0254-0584, UGC-3971 in 2018. Publisher: Elsevier.
- 29. Dr. S. Valanarasu, Assistant Professor of Physics, published an article on "Investigation of Structural, Optical and Electrical Properties of Zns Thin Films Prepared by Nebulized Spray Pyrolysis for Solar Cell Applications" in the journal of *Optical and Quantum Electronics*, ISSN: 0306-8919, UGC-36505 in 2018. Publisher: Springer.
- 30. Dr. S. Valanarasu, Assistant Professor of Physics, published an article on "Effect of Pr 3+ doping on key Properties of CdO Thin Films Deposited by Spray Pyrolysis using perfume atomizer" in the journal of *Physics and Chemistry of Solids*, ISSN: 0022-3697, UGC-19209 in 2018. Publisher: Pergamon –Elsevier.
- Dr. Nivetha Martin, Assistant Professor of Mathematics, published an article on "Causative Factors of Gestational Diabetics in Women-An Analysis on the Consequential Impacts using LASFCM" in the *Mapana* journal of Science, Vol.17, No.1, ISSN: 0975-3303 in 2018.
- 32. Dr. Nivetha Martin, Assistant Professor of Mathematics, published an article on "Exploring the Core Attributes of Digitalization Causing High Impact on Learning Trends of Students using LIFAM" in the journal

- Engineering & Technology, Vol.7, ISSN: 2319-8613 in 2018.
- 33. Dr. Nivetha Martin, Assistant Professor of Mathematics, published an article on "Analysis of the Contributing Factors of the Low Productivity of Small Scale Industries in India using OLFCM" in the International journal of *Pure and Applied Mathematics*, Vo.119, No.18, ISSN: 2945-2958 in 2018.
- 34. Dr. S. Jesurajan, Head and Associate Professor of English, published an article on "Beyond the Postcolonial" in the International Refereed journal of *English Language*, *Literature* and *Criticism*, Vol.IX, No.2, ISSN:0976-299X, UGC:44728 in August 2018.
- 35. Dr. P. Veerasamy, Assistant Professor of English, published an article on "Portrayal of Ethnic Clash in Michael Ondaatje's Anil's Ghost: A Non-Tamil Reading" in the International Refereed journal of *English Language, Literature and Criticism*, Vol.IX, No.2, ISSN:0976-299X, UGC:44728 in August 2018.
- 36. Mr. P. Kalaivanan, Assistant Professor of English, published an article on "Impact of Power Politics in Post Colonization: Re Imaging Humanism in the Works of J.M.Coetzee" in the International Refereed journal of *English Language, Literature and Criticism*, Vol.IX, No.2, ISSN: 0976-299X, UGC:44728 in August 2018.
- Mr. J. Keba Immanuvel, Assistant Professor of English, published an article on "Discrimination and Indignities of Colour Bar in Wole Soyinka's Poem "Telephone Conversation"" in the international Refereed journal of English Language, Literature and Criticism, Vol.IX, No.2, ISSN:0976-299X, UGC:44728 in August 2018
- 38. Mr. M. Nallakurumban, Assistant Professor of English, published an article on "The Indo-Caribbean Women's Subconscious Memory as a Flash of Insight in Rambai Espinet's the Swinging Bridge" in the International Refereed journal of *English Language*, *Literature* and Criticism, Vol.IX, No.2, ISSN:0976-299X, UGC:44728 in August 2018.
- 39. Dr. K.S. Joseph Wilson, Head and Associate Professor of Physics, published an article on "Nonlinear Polarization in Metal Nanocomposite System Based Photonic Crystals" in the International journal for *Light* and *Election Optics*, in September 2018. Publisher: Elsevier.

- 40. Mr. R. Justin Kennedy, Head and Assistant Professor of Computer Science and Application, published an article on "A Study on Load Balancing Techniques in Cloud Computing Environment" in the International journal of Scientific Research in Computer Science Applications and Management Studies, Vol.7, Issue-5, ISSN: 2319-1953 in September 2018.
- 41. Mr. R. Kadher Farook & Mr.J. Albert Irudaya Raj, Assistant Professors of Information Technology & Management, published an article on "An Efficient Voice Based Person Identification System for Secured Communication" in the JCSE international journal of Computer Science and Engineering, ISSN:2347-2693, Vol-6, Issue-9 in September 2018.
- 42. Dr. M. Arulappan, Assistant Professor of Philosophy, published an article on "New Humanism M.N.Roy: A Postcolonial Perspective" in the journal of Literary Endeavour, Vol.IX, Issue-4, ISSN: 0976-299X in October 2018.
- 43. Mr. S. Pandikumar, Assistant Professor of Information Technology & Management, published an article on "Study and Analysis of user Interaction Patterns in a Smartphone" in the International journal of Innovative Knowledge Concept, Vol.6, No.10, ISSN: 2454-2415, UGC:64094 in October 2018.
- 44. Dr. Nivetha Martin, Assistant Professor of Mathematics, published an article on "Economic Production Quantity Model for Green Quality Products with its Associated Costs of Product Switching and Three Step Production Processes" in the journal of Applied Science and Computations, Vol.5, Issue.11, ISSN: 1076-5131 in November 2018.
- 45. Dr. Nivetha Martin, Assistant Professor of Mathematics, published an article on "Is Urbanization a Cause of Health Disaster: Ranking Analysis by Decagonal FCM" in the International journal of Management Technology and Engineering, Vol.8, Issue. XI, ISSN: 2249-7021 in November 2018.
- 46. Dr. Nivetha Martin, Assistant Professor of Mathematics, published an article on "Optimization of an Inventory Model Enclosing Environmental Costing" in the International journal of Multidisciplinary Research, ISSN: 22478-2311, UGC: 42329 in November 2018.

- 47. Dr. A. Thomas William, Dean and Associate Professor of Rural Development Science, published an article on "Issues, Programmes and Right to Survival in CPOs: Effectiveness Study among Staff" in the International Online Multidisciplinary Journal of Review of Research, Vol.8, Issue-2, ISSN: 2249-894X, UGC No: 48514 in November 2018.
- 48. Mr. M. Karunanidhi, Assistant Professor of Tamil, published an article on "நீர் நாடோடிகள்: பெருவெளியில் கரைந்த மனிதர்கள்" in the journal of காவ்யா தமிழ், ISSN: 2277-9221 in October to December 2018.
- 49. Dr. Nivetha Martin, Assistant Professor of Mathematics, published an article on "Ranking of the Factors Influencing Consumer Behaviour Using Fuzzy Cognitive Maps" in the journal of Asia Mathemaika, Vol.2, Issue-3, ISSN: 2457-0834 in December 2018.
- 50. Mr. A. Vijayakumar, Assistant Professor of Computer Science and Application, published an article on "Survey on Enhancing Cloud Storage Using Deduplication Technique" in the JCSE International journal of Computer Science and Engineering, Vol.6, Issue-2, ISSN: 2347-2693 in 2018.
- 51. Mr. A. Vijayakumar, Assistant Professor of Computer Science and Application, published an article on "Cloud Computing Applications in Higher Education" in the JCSE international journal of Computer Science and Engineering, Vol.6, Issue-2, ISSN-2347-2693 in 2018.
- 52. Mr. R. Justin Kennedy, Head and Assistant Professor of Computer Science and Application, published an article on "A Proposed Model for Campus Based Community Cloud (CBCC) for Higher Education in Jesuit College Libraries in TN using Load Balancing Techniques" in the International journal of Computer Science and Engineering, Vol.6, Issue-2, ISSN-2347-2693 in 2018.

PROCEEDINGS

1. Dr. Nivetha Martin, Assistant Professor of Mathematics, published an article on "Analysis of the Need of Green Economics using Fuzzy Cognitive Maps with Hexagonal Weights" in the AIP Conference proceeding of the titled Electrical Materials and Applied Science, ISBN: 978-0-7354-1647-5 in 2018



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(Affiliated to Madural Kamaraj University and Reaccredited by NAAG at 'A' Grade with a CGPA of 3.66) Karumathur = 625 514, Madurai. Tamil Nadu.



June 2019

Issue No. 24

INSIDE

IN FOCUS

CAMPFEST-2018

40th Graduation Day

Pongal

Women's Day

49th College Day

HIGHLIGHTS

Seminars

Conferences

Workshops

RESEARCH ACTIVITIES

Research

Resource Sharing

Publications

Paper Presentations

Participation

OTHERS

Department Activities

Students' Achievements

Staff Development Programmes

EXTENSION ACTIVITIES

National Service Scheme

Youth Red Cross

ARISE

RADAR

Rotaract

Nature Club Mentor Care

Foundation Course



40th Graduation Day

49th College Day





CAMPFEST-2018







Women's Day



believe whatever they see or watch in media rather they must analyse and understand with clarity.

The Second Plenary Session was moderated by Mr.J.Keba Immanuvel, Assistant Professor of English. Dr.R.Murali, Former Principal, The Madura College delivered the Keynote Address on "Influence of Politics Issues on Contemporary Literature". In his address, He gave a bird's eye view of the relationship between literature and politics. It was clearly mentioned that literature and politics are inseparable. He made a request to the audience that they should make themselves able to differentiate between good literature and bad literature in the same way good politics and bad politics.

Around Twenty Five research articles were presented.

The Valedictory session started with prayer song. Ms.L.Nestricia Mary, Assistant Professor of English welcomed the gathering. Dr. S. Michael John Peter, the Deputy Principal was the Resource Person of the occasion. In his valedictory Address, he appreciated the department for organising seminar and selecting a topic which is very much relevant to the current time. He also highlighted the close relationship between Literature and politics by citing through evidences like Civil Disobedience of Henry Thoreau, Effects of French Revolution. Certificates were distributed to the Participants and Paper presenters. Mr. A. Johnson Amirtharaj, Assistant Professor and the Organising Secretary of the Seminar proposed the vote of thanks. The seminar came to an end with the National Anthem. Assistant Professors Mr. D. Prasanth Arokia Samy, Ms.A.J. Glory Gursheth and Mr. P. Xavier presented the programmes.

INTERNATIONAL WORKSHOP ON BEFRIENDING ENGLISH



The Department of English of Arul Anandar College, Karumathur organized a one-day International Level Workshop on **Befriending English** on 21st March

2019. Rev.Dr.S. Basil Xavier, S. J., Principal, presided over the inaugural function. Dr. S. Jesurajan welcomed the dignitaries and the audience. Ms.Parvathi Natarajan, 520 Mornington Avenue, Timbercreek Apartments, London On, Canada N5Y3B4, delivered a Special Address on the changing scenario of communication and the use of English around the globe. The technical session was mastered by Mr.I.Amalraj, Assistant Professor of English, Kodaikanal Christian College, Kodaikanal. In his lecture he highlighted how English could be vibrantly used to make communication effectual. II UG Part II English students from Philosophy, Mathematics, Chemistry, and Physics along with 110 students from six colleges from Madurai participated and got benefitted of this workshop. Ms.A.Sahaya Josephine Mary, Assistant Professor proposed the vote of thanks.

RESEARCH ACTIVITIES

RESEARCH

Ms.L.Nestricia Mary, Registered for Ph.D Degree, Madurai Kamaraj University, 27th November 2018.

Ms.R.Yogarani, Registered for Ph.D Degree at Bharathidasan University, Trichy, November 2018.

Dr.S.Valanarasu, Research Supervisor, Department of physics conducted Viva-Voce Examination to his Research scholar K.Deva Arun Kumar at AAC, Karumathur, 11th December 2018.

Mr.A.Gnana Arockiam, Registered for Ph.D. Degree, Madurai Kamaraj University, 15th December 2018.

Dr.A.Shanmugaraju, Research Supervisor, Department of physics conducted Viva-Voce Examination to his Research scholar Mr.M.Syed Ibrahim(F9206) on 18th December 2018 at AAC, Karumathur.

Mr.S.Jegan Karuppiah, was Awarded Ph.D degree of Doctor of Philosophy at The Gandhigram Rural Institute, Gandhigram on 3rd January 2019.

Dr.S.Lourdunathan, Research Supervisor conducted Public Viva-Voce Examination to his Research scholar John J.Jesudasan (P4056) (Ph.D Scholar), on 13th February 2019 at Madurai Kamaraj University, Madurai.

PUBLICATIONS

 Dr.K.S.Joseph Wilson, Head and Associate Professor of Physics, published an article on "A Novel Design and Simulation of Split Ring Resonator and Wire Strip to Form Metamaterial for Microwave Applications" in the journal of Research and Analytical Reviews,



- ISSN: 2349-5138, Vol.5, Issue: 4, UGC No: 43602, in December 2018.
- Dr.K.S.Joseph Wilson, Head and Associate Professor of Physics, published an article on "Metamaterial Inspired Dual Band Antenna" in the International journal of *Scientific Research in Physics and Applied Sciences*, ISSN: 2348-3423, Vol.6, Issue: 6, pp.129-133, UGC No:63781, in December 2018.
- Dr.A.Shanmuguaraju, Assistant Professor of Physics, published an article on "Distinction in the Interplanetary Characteristics of Accelerated and Decelerated CMEs/Shocks" in the journal of *Earth, Moon and Planets*, Publisher: Springer, ISSN: 0167-9295, UGC No:12343 in December 2018.
- Mr.M.Murugapandi, Assistant Professor of Chemistry, published an article on "Biogenic Synthesis, characterization and Pharmacological Study of Silver Nanoparticles using Enicostema Axillare Leaves" in the journal of *Pharmacognosy* and *Chinese Medicine*, ISSN: 2576-4772, Vol.2, Issue: 5 in December 2018.
- 5. Mr.M.Karunanidhi, Assistant Professor of Tamil, published an article on "நீர் நாடோடிகள்: பெருவெளியில் கரைந்த மனிதர்கள்" in the journal காவ்யா தமிழ், ISSN: 2277-9221 in October to December 2018.
- 6. Dr.M.Paramasivan, Assistant Professor of Tamil, published an article on "முத்தொள்ளாயிர மீட்பில் தொல்காப்பிய உரையாசிரியர்கள்" in the journal மணந்கேணி, ISSN:2249-9164 in December 2018.
- Ms.P.Revathi & Ms.N.Gayathri, Assistant Professors of Food Science & Technology, published an article on "Effect of Health Mix Supplementation of Health Status of the Selected Adolescent Girls" in the Universal Review journal, ISSN: 2277-2723, Vol.7, Issue: XII, UGC No: 40792 in December 2018.
- Ms.P.Revathi, Head and Assistant Professor Food Science & Technology, published an article on "Development and Sensory Evaluation of Vegetable and Fruit Peel Incorporated Snacks" in the Asian journal of Multidimensional Research, ISSN: 2278-4853, Vol.7, Issue: 5, UGC No: 47638 in December 2018
- Mr.S.Pandikumar, Assistant Professor of Computer Science and Application published an article on "PS Energy Optimization: A Proposed Model of Adaptive

- Radio Connection Management" in the Journal of *Management, Technology and Engineering*, ISSN: 2249-7455, UGC No: 45550 in December 2018.
- 10. Rev.Dr.A.Anto Nelson, Assistant Professor of Philosophy, published an article on "Yoga-Its Significance as a Source of Healthy Living" in the International journal of *Research and Analytical Reviews*, ISSN: 2349-5138, Vol.6, Issue-1, January 2019.
- 11. Mr.S.Santhosh Kumar Jacob, Assistant Professor of Physics, published an article on "Improving the conductivity of cuprous oxide thin film by doping Calcium via feasible nebulizer spray technique for solar cell (FTO/ZnO/Ca-Cu₂O)" in the journal of Materials Research Express, ISSN: 2053-1591, UGC No-3985, January 2019.
- 12. Mr.G.Peter Michael Raj, Assistant Professor of Physical Education published an article on "Analysis of Psychological Variables among Government, Aided and Private Arts and Sciences College Sportsman" in the journal of *Emerging Technologies* and *Innovative Research*, ISSN: 2349-5162, UGC No:63975, Vol.6, Issue: 1 in January 2019.
- 13. Dr.K.S.Joseph Wilson, Head and Associate Professor of Physics, published an article on "Analysis of Photonic Band Gap in Photonic Crystal with Epsilon Negative and Double Negative Materials" in the *Optik- journal for Light and Electron Optics*, Publisher: Elsevier. ISSN# 0030-4026, UGC No: 36525 in February 2019.
- 14. Dr.S.Valanarasu, Assistant Professor of Physics, published an article on "Influence of Rare Earth Material (Sm³+) Doping on the Properties of Electrodeposited Cu2O Films for Optoelectronics" in the Journal of *Materials Science: Materials in Electronics*, ISSN: 0957-4522, Vol.30, Issue: 3, pp.2530-2537, UGC No:24464 in February 2019.
- 15. Dr. Nivetha Martin, Assistant Professor of Mathematics, published an article on "Study on Industrial Problems using Garrett Ranking Technique" in the *BULMIM journal of Management Research*, ISSN: 2455-3298, Vol. 4, Issue: 1 in February 2019.
- 16. Dr.A.Thomas William, Associate Professor of Rural Development Science, published an article on "Skill up Scaling and Training as Life Long Learning (L3) in



- Child Protection Organisations: An Empirical Study" in the journal of *Review of Research*, ISSN: 2249-894X, Vol.8, Issue: 5, UGC No: 48514 in February 2019.
- 17. Rev.Dr.A.Sebastian Mahimairaj, Assistant Professor of Rural Development Science, published an article on "Role of Women in Religion" in the journal of *Arts, Science and Humanities*, ISSN: 2321-788X, Vol.6, Issue: 1 in February 2019.
- 18. Rev.Dr.A.Sebastian Mahimairaj, Assistant Professor of Rural Development Science, published an article on "Teaching Effectiveness of Women Teachers in Relation to their Emotional Intelligence", journal of *Arts, Science and Humanities Conduct*, ISSN: 2321-788X, Vol.6, Issue: 1 in February 2019.
- 19. Mr.J.Keba Immanuvel, Assistant Professor of English Literature, published an article on "Depiction of Self: A Postcolonial Approach to Kamala Das's" in the journal of *English Language, Literature in Humanities*, ISSN: 2321-7065, Vol.7, Issue: 2, UGC No: 43979 in February 2019.
- 20. Ms.N.Gayathri & Ms.P.Revathi", Assistant Professors of Food Science and Technology, published an article on "Drying Characteristic of Phyllanthus emblica using Cross Flow Drier and Vibro Fluidizer Drier" in the journal of *Research and Analytical Reviews*, ISSN: 2349-5138, Vol.6, Issue: 1, UGC No: 43602 in February 2019.
- 21. Mr. S. Sebastian, Dr. I. Kulandaisamy and Dr. S. Valanarasu Dept. of Physics, published an article on "Influence of Al Doping Concentration on the OPto-Electronic Chattels of SnS Thin Films Readied by NSP" in the journal of *Optical and Quantum Electronics*, ISSN: 0306-8919, UGC No: 36505 in March 2019.
- 22. Mr.S.Sebastian, Dr.I.Kulandaisamy and Dr.S.Valanarasu Dept. of Physics, published an article on "Investigations on Fe Doped SnS Thin Films by Nebulizer Spray Pyrolysis Technique for Solar Cell Applications" in the journal of *Materials Science: Materials in Electronics*, ISSN: 0957-4522, UGC No: 24464 in March 2019.
- 23. Dr.S.Valanarasu, Assistant Professor of Physics, published an article on "Effect of Nd Doping on Structural and Opto-Electronic Properties of CdO Thin Films Fabricated by a Perfume Atomizer Spray Method" in the journal of Bulletin of Materials

- Science, ISSN: 0250-4707, UGC No: 9568 in 2019.
- 24. Mr.G.Peter Michael Raj, Assistant Professor of Physical Education published an article on "Analysis of Psychological Variables between Training under a Coach and Self-Training Athletes" in the journal of Advance Research, Ideas and Innovations in Technology, ISSN: 2454-132X, Vol.5, Issue: 2 in 2019.
- 25. Dr.S.Valanarasu, Assistant Professor of Physics, published an article on "In-depth Study on Structural, Optical, Photoluminescence and Electrical Properties of Electrodeposited Cu2O Thin Films for Optoelectronics: An Effect of Solution pH" in the journal of *Microelectronic Engineering*, ISSN: 0167-9317, UGC No: 31170 in March 2019.
- 26. Dr.S.Valanarasu, Assistant Professor of Physics, published an article on "Physical Properties Evaluation of Nebulized Spray Pyrolysis Prepared Nd Doped ZnO Thin Films for Opto-Electronic Applications" in the journal of *Materials Science: Materials in Electronics*, ISSN: 0957-4522, UGC No:24464 in March 2019.
- 27. Dr.C.S.A.Raj, Assistant Professor of Physics, published an article on "Optimizing the Annealing Temperature of pure Zinc Telluride (ZNTE) Thin Films for Solar Cell Applications in the International journal of *Research and Analytical Reviews*, ISSN:2349-5138, Vol.6, Issue:1, UGC No: 43602 in March 2019.
- 28. Dr.C.S.A.Raj, Assistant Professor of Physics, published an article on "Characterization of hybrid thin films for application in the field of solar cells – A response to climate change" in the International Journal of Advance Research, Ideas and Innovations in Technology, ISSN: 2454-132X, Volume 5, Issue: 2 in 2019
- 29. Dr.Nivetha Martin, Assistant Professor of Mathematics, published an article on "Application of New Additive Ratio Assessment (NARAS) Method in Selection of Material for Optimal Design of Engineering Components" in the journal of *Materials Today: Proceedings*, ISSN: 2214-7853, Vol.11, UGC No: 49021 in 2019.
- Dr.P.Veerasamy, Assistant Professor of English, published an article on "The Nexus of Power in Kokilam Subbiah's Mirage" in the journal of *Emerging Technologies and Innovative Research*, ISSN: 2349-5162, Vol.6, Issue.3, UGC No: 63975 in March 2019.



- 31. Mr.P.Ramachandran, Assistant Professor of Information Technology & Management, published an article on "Teaching Effectiveness of Women Teachers in Relation to their Emotional Intelligence" in the journal of *Arts, Science and Humanities*, ISSN: 2321-788X, Vol.6, Issue: 1 in 2019.
- 32. Dr.A.Shanmugaraju, Assistant Professor of Physics, published an article on "A Study in Radio-loud Interacting/non-interacting CMEs-associated SEPs and Solar Flares" in the journal of Advances in Space Research, ELSEVIER, ISSN-0273 1177 in 2019.
- 33. Dr.A.Shanmugaraju, Assistant Professor of Physics, published an article on "Study of Interplanetary CMFs/Shocks during Solar Cycle 24 using Drag-Based Model: the Role of Solar Wind" in the journal of *Solar Physics*, SPRNGER, ISSN 0038 0938 in April 2019.
- 34. Dr.Nivetha Martin, Assistant Professor of Mathematics, published an article on "Ranking the Benefits of online Learning in Student's Perspective using Linguistic Fuzzy Cognitive Maps" in the journal of *Applied Science and Computations*, ISSN: 1076-5131, Vol.VI, Issue: IV, UGC No: 41238 in April 2019.
- 35. Mr.S.Rex Rosario, Assistant Professor of Physics, published two articles on "Analysis of Cu doping Concentration on PbS thin Films for the Fabrication of Solar Cell using Feasible Nebulizer Spray Pyrolysis" and "Fabrication and Characeterization of Lead Sulfide (PbS) Thin Films Based Heterostructure (FTO/CdS/PbS/Ag) Solar Cell by Nebulizer Spray Method" in the journal of *Materials Research Express* in 2019.
- 36. Ms.W.Sahaya Thivya, Ms.Jenita Sironmani and Dr.Nivetha Martin, Assistant Professors of Mathematics, published an article on "Resolving Manpower Allocation Problem using LDIFS and NEDM" in the journal of Applied Science and Computations, ISSN: 1076-5131, Vol.VI, Issue. IV, UGC No: 41238 in April 2019.
- 37. Dr.G.Ramkumar, Assistant Professor of Mathematics, published two articles on "A(b,µ)-Continuity in Topological Spaces" and "Nano (1,2)*-☑-Closed Sets in Nano Bitopological Spaces" in the journal of *Applied Science and Computations*, ISSN: 1076-5131, Vol.VI, Issue.IV, UGC No-41238 in April 2019.

PROCEEDINGS

1. Dr.K.S.Joseph Wilson, Associate Professor of

- Physics, published articles on "Antireflection Coating Application of Zinc Sulphide thin films by Nebulizer Spray Technique", "Hydrothermal Synthesis and Characterization of iron/ copper/nickel Doped Lithium Niobate Particles toward Optoelectronic Application" and "The Effect of Angle of Incidence on Photonic Bandgap in LiNbO3-Ag Composite Based one Dimensional Photonic Crystal" in the Conference Proceedings on 63rd DAE Solid state physics symposium, Harayana in 2018.
- Dr.Nivetha Martin, Assistant Professor of Mathematics published an article on "Hexa-Lingual FCM Application in Ranking the Qualities of Employee in Employer's Perspective" in the International Conference Proceedings on *Emerging Trends and Challenges* in December 2018.
- 3. Dr.K.S.Joseph Wilson, Associate Professor of Physics, published articles on "Photonic Bandgap of Ag-Si Photonic Crystal Fiber", "Investigation on Photonic Band Gap of a Magneto Photonic Crystal", "Influence of Copper on the Synthesis of Hydroxy Apatite by Co-Precipitation method" and "Efficiency Enhancement of CZTS/CdS Solar Cell with Nanocomposite Antireflection Coating" in the 5th International conference on Nanoscience and Nanotechnology, SRM in 2019.

CONTRIBUTION TO BOOK

- Mr. S. Sebastian, Assistant Professor & Dr. I. Kulandai samy, Associate Professor of Physics, published an article on "Solar Cell Applications of Fe-Doped SNS thin Films by Nebulizer Spray Pyrolysis (NSP) Technique" in the book titled Molecular Structure of Nano and Bio Materials (ICMSNBM-2018), ISBN: 978-93-86590-72-5 in 2018.
- Ms.P.Jerlin Rupa, Assistant Professor of Business Administration, published an article on "Role of ICT in Rural Marketing of India" in the book titled *Digital Marketing – A Global Perspective*, ISBN: 978-93-87871-67-0 in 2018.
- Ms. K. Mangayarkarasi, Assistant Professor of Business Administration, published an article on "Green Marketing Strategies by using Digital Marketing" in the book titled *Digital Marketing –* A Global Perspective, ISBN: 978-93-87871-67-0 in 2018
- 4. Mr.M.Karunanidhi, Assistant Professor of Tamil,



Arul Anandar College (Autonomous)

(Affiliated to Madurai Kamaraj University and Reaccredited by NAAC at 'A' Grade with a CGPA of 3.66) Karumathur - 625 514, Madurai. Tamil Nadu.



March 2020

Issue No. 25



Golden Jubilee





Graduation Day













Council





INSIDE

IN FOCUS

Inauguration of Students' Council 50th Annual Sports Day Inauguration of Golden Jubilee Christmas Celebration Pongal Celebration 41st Graduation Day

HIGHLIGHTS

Seminars Conferences Workshops

RESEARCH ACTIVITIES

Research Publications **Paper Presentations** Resource Sharing

OTHERS

Staff Achievements **Department Activities** Students' Achievements

EXTENSION ACTIVITIES

National Service Scheme National Cadet Corps Youth Red Cross Physical Education ARISE

Rotaract

- Centre for Women's Studies
- Foundation Course



Ph.D Register

SI. No	Date	Research Supervisor	Scholar
1	12.11.2019	Dr.M.Gilbert Rani	Ms.K.Muthulakshmi (Reg.No.P5885), Madurai Kamaraj University
2	19.11.2019	Dr. Nivetha Martin	Ms.R.Priya, (Reg.No. P5888), Madurai Kamaraj University

Dr.Nivetha Martin, Assistant Professor of Mathematics, is the Research Supervisor for S.Kavitha (REG.No.EMA:181009), who has registered for M.Phil in September 2019.

PUBLICATIONS

- Dr.K.S.Joseph Wilson, Head and Associate Professor of Physics, published an article on Properties of Ternary Photonic Crystal Consisting of Dielectric/ Plasma/Dielectric as a Lattice Period in the Journal of Optic, Vol.185, pp.784-793 in May 2019.
- Dr.K.S.Joseph Wilson, Head and Associate Professor of Physics, published an article on Amalgamation and Characterization of Porous Hydroxyapatite Bio Ceramics at Two Various Temperatures in the Journal of Materials Science in Semiconductor Proceeding, ISSN: 1369-8001, Vol.106, pp.255-261 in May 2019.
- Dr.S.Valanarasu, Assistant Professor of Physics, published an article on The Effect of rare Earth Nd3+ Doping on Physical Characteristics of Cu2O thin Films Derived by Electrodeposition Technique in the Journal of Thin Solid Films in May 2019.
- Dr.K.S.Joseph Wilson, Head and Associate Professor of Physics, published an article on Analysis of Properties of Metamaterial-based Composite System in the International Journal of Modern Physics B, ISSN: 0217-9792 in June 2019.
- Dr.S.Valanarasu and Mr.S.Rex Rosario, Assistant Professors of Physics, published an article on Effect of carrier gas pressure on structural, optical and photovoltaic properties of tin sulphide thin films prepared by nebulizer spray pyrolysis method in the Journal of *Bulletin of Materials Science* in June 2019.
- Dr.S.Rayappan, Head and Assistant Professor of Chemistry, published an article on A Facile Novel Synthesis of Tho./Fe.O4 Nanocomposite

13

- with Enhanced Photocatalytic Activity for the Degradation of Malachite Green under Visible Light Irradiation in the International Journal of Pharmaceutical Sciences and Research, ISSN: 2320-5148, Vol.10, No.6 in June 2019.
- Dr.S.Arul Prasad, Associate Professor of Rural Development Science, published an article on Aspiration of Youth in Chennai Slums in the International Journal of Research in Humanities, Arts and Literature, Vol.7, No.6 in June 2019.
- Dr. Nivetha Martin, Assistant Professor of Mathematics, published an article on Octa-Hexa Fuzzy Promthee for Ranking the feasible Industrial Waste Management Methods in the Pramana Research Journal, ISSN: 2249-2976, Vol.9, Issue.6 in June 2019.
- Dr.P.Veerasamy, Assistant Professor of English Literature, published an article on Historicity in Manohar Malgonkar's Line of Mars in the Research Journal of English Language and Literature, ISSN: 2395-2636, Vol.7, Issue.2 in June 2019.
- Dr.P.Veerasamy, Assistant Professor of English Literature, published an article on The Influence of Politics in Shyam Selvadurai's Funny Boy in the Research Journal of English, ISSN: 2456-2696, Vol.4, Issue.1 in June 2019.
- Dr.P.Xavier, Assistant Professor of English Literature, published an article on Identity Crisis in the Select Novels of Anita Rau Badami in the Research Journal of English, ISSN: 2456-2696, Vol.4, Issue.1 in June 2019
- Mr.M.Subash, Assistant Professor of English Literature, published an article on Female Opposition against Domination in Shobha DE'S "Strange Obsession" in the Research Journal of English, ISSN: 2456-2696, Vol.4, Issue.1 in June 2019.
- 13. Mr.I.Johnson Stephen, Assistant Professor of English Literature, published an article on Moral Aesthetics: An Iconic Text in the Era of Post-Truth-A Critique in the Research Journal of English, ISSN: 2456-2696, Vol.4, Issue.1 in June 2019.
- 14. Mr.R.Justin Kennedy, Assistant Professor of Computer Science and Application, published an article on Review on Load Balancing in Cloud Computing Environment in the Journal of Emerging Technologies and Innovative Research, ISSN: 2349-5162, Vol.6, Issue.6 in June 2019.
- Dr.S.Valanarasu and Mr.S.Rex Rosario, Assistant Professors of Physics, published an article on



- Nebulizer Spray Assisted Chemical Vapour Deposited (NACVD) Tin Disulfide (SnS₂) thin Films for Solar Cell Window Layer Applications in the Journal of *Materials Research Express*, ISSN: 2053-1591, Vol.6. No.1 in July 2019.
- Dr.S.Valanarasu and Mr.S.Rex Rosario, Assistant Professors of Physics, published an article on Investigation on Nebulizer Spray Coated Nd-Doped SnS₂ Thin Films for Solar Cell Window Layer Application in the Journal of Materials Science: Materials in Electronics, ISSN:0957-4522, Vol.30, Issue.15, pp.13644-13973 in July 2019.
- Dr.S.Valanarasu, Assistant Professor of Physics, published an article on Preparation of Eu-Doped Cu2O Thin Films Using Different Concentrations by SILAR and Their Heterojunction Property with ZnO in the Journal of Electronic Materala, ISSN: 0361-5235, Vol.48, Issue.7, pp.4138-4147 in July 2019.
- Dr.K.S.Joseph Wilson, Head and Associate Professor of Physics, published an article on Role of Multilayer Antireflective Coating in ZnO Dye-Sensitized Solar Cell in the Journal of Vacuum, Vol.165, pp.58-61 in July 2019.
- Mr.S.Sebastian and Dr.S.Valanarasu, Assistant Professors of Physics, published an article on Enhancement in Photovoltaic Properties of Nd:SnS Films Prepared by Low-cost NSP Method in the Journal of Rare Metals, ISSN: 1001-0521 in July 2019.
- Dr.Nivetha Martin, Assistant Professor of Mathematics, published an article on Multi-Objective Multi Time Span Fractional Capacitated Transportation Problem in the Two Echelon Supply Chain with Multiform Items and Mixed Constraints in the International Journal of Recent Technology and Engineering, ISSN: 2277-3878, vol.8, Issue.2S3 in July 2019.
- Dr.A.Anto Nelson, Assistant Professor of Philosophy, published an article on Exploration of Myths on Lord Ganesha for Contemporary Utility in Religion in the Journal of Religious Myths Their Contemporary Relevance in 2019.
- Ms.M.Sasikala, Assistant Professor of Mathematics, published an article titled On Construction of Fuzzy Intrinsic Edge Magic Graphs in the Journal of Mathematical and Computational Science, ISSN: 1927-5307, Vol.9, No.6, pp.692-701 in July 2019.
- Dr.Nivetha Martin, Assistant Professor of Mathematics, published an article on A Linguistic

14

- Approach of IFSM with Euclidean Distance in Decision Making of Compatible Waste Treatment Methods in the International Journal of Applied Mathematics and Information Sciences, ISSN: 1935-099, Vol.13, No.S1, pp.255-259 in August 2019.
- 24. Dr.Nivetha Martin and Ms.I.Pradeepa, Assistant Professors of Mathematics, published an article on Micronutrient Deficiency Stabilizing Model Using Fuzzy Relational Cognitive Maps with Hesitant Fuzzy Soft Sets in the International Journal of Analytical and Experimental Modal Analysis, ISSN: 0886-9367, Vol.XI, Issue.VII in August 2019.
- Ms.M.Sasikala, Assistant Professor of Mathematics, published an article on Properties of Prime and Composite Pseudo Intrinsic Edge-Magic Graphs in the International Journal of Scientific & Technology Research, ISSN: 2277-8616, Vol.8, Issue.8 in August 2019.
- 26. Ms.K.U.Pavithra Krishna, Assistant Professor of Food Science & Technology, published an article on Micronutrient Deficiency Stabilizing Model Using Fuzzy Relational Cognitive Maps with Hesitant Fuzzy Soft Sets in the International Journal of Analytical and Experimental Modal Analysis, ISSN: 0886-9367, Vol.XI, Issue.VII in August 2019.
- 27. Mr.A.Vijaya Kumar, Assistant Professor of Computer Science and Applications, published an article on A Study on Data Compression in Cloud Storage in the International Journal of Analytical and Experimental Modal Analysis, ISSN: 0886-9367, Vol.XI, Issue.VIII in August 2019.
- 28. Mr.P.Ramachandran, Assistant Professor of Information Technology and Management, published an article on Teaching Effectiveness of College Teachers in Relation to their Emotional Intelligence in the International Journal of Analytical and Experimental Modal Analysis, ISSN: 0886-9367, Vol.XI, Issue.VIII in August 2019.
- 29. Dr.R.Gnanasekaran, Assistant Professor of English Literature, published an article on Naveena Inthiyaavil Pen Thozhil Munaivarkal: Savaalkalum Theervukalumin the International Journal of Modern Thamizh Research – A Quarterly International Multilateral Thamizh Journal, ISSN: ISSN 2321-984X, Vol.7, (3) in September 2019.
- 30. Dr.A.Sebastian Mahimairaj, Assistant Professor of Rural Development Science, published an article on Naveena Inthiyaavil Pen Thozhil Munaivarkal: Savaalkalum Theervukalum in the International Journal of Modern Thamizh Research – A Quarterly



- International Multilateral Thamizh Journal, ISSN: ISSN 2321-984X, Vol.7, (3) in September 2019.
- Dr.R. Gnanasekaran, Assistant Professor of English Literature, published an article on Manavarkal, Petrorkal matrum Aasiriyarkal Nokkil Balaveenappadutthuthal in the Journal of Classical Thamizh – A Quarterly International Multilateral Thamizh Journal, ISSN: 2321-0737, Vol.7, (3) in September 2019.
- Dr.A.Sebastian Mahimairaj, Assistant Professor of Rural Development Science, published an article on Manavarkal, Petrorkal matrum Aasiriyarkal Nokkil Balaveenappadutthuthal in the Journal of Classical Thamizh – A Quarterly International Multilateral Thamizh Journal, ISSN: 2321-0737, Vol.7, (3) in September 2019.
- 33. Dr.S.Valanarasu, Assistant Professor of Physics, published an article on A Noticeable Effect of Novel Nd³+ Doping on Physical Properties of Nebulizer Spray Deposited AZO thin films for Optoelectronic Technology in the Journal of Optical and Quantum Electronics ISSN: 0306-8919 in September 2019.
- 34. Dr.S.Valanarasu, Assistant Professor of Physics, published an article on Analysis of Pr Co-Coped Al:ZnO Thin Films using Feasible Nebulizer Spray Technique for Optoelectronic Technology in the Journal of Applied Physics A, ISSN: 0947-8396 in September 2019.
- 35. Dr. Nivetha Martin, Assistant Professor of Mathematics, published an article on Analysis of The Risk of Ebola Virus Disease: Fuzzy Vikor Method Based on The Possibility Theory in the International Journal of Management and Applied Science, ISSN: 2394-7926 Volume-5, Issue-9 in September 2019.
- 36. Dr.Nivetha Martin, Assistant Professor of Mathematics, published an article on Evolution of Concentric Fuzzy Hypergraph for Inclusive Decision Making in the International Journal of Engineering and advances Technology, ISSN: 2249-8959, Vol.8, Issue-6S3 in September 2019.
- Dr.K.S.Joseph Wilson, Head and Associate Professor of Physics, published an article on Effect of Metal Nanoparticles on Polariton Dispersion in Low Dimensional System in the Journal of Materials Research Express, Vol.6, No.11 in October 2019.
- 38. Ms.I.Pradeepa,Assistant Professor of Mathematics, published an article on Evolution of Concentric Fuzzy Hypergraph for Inclusive Decision Making in the International Journal of Engineering and

- advances Technology, ISSN: 2249-8959, Vol.8, Issue-6S3 in September 2019.
- 39. Dr.S.Arul Prasad, Associate Professor of Rural Development Science, published an article on Life Skills of Youth in Chennai Slums in the Journal of Think India, ISSN: 0971-1260, Vol.22, Issue.3 in September 2019.
- 40. Dr.S.P.Malarkannan, Assistant Professor of Rural Development Science, published an article on Storage Studies of Cultured Low Fat Synbiotic Buttermilk in the International Journal of Current Advanced Research, ISSN: 2319-6505, Vol.8, Issue.9, pp.19895-19900 in September 2019.
- 41. Dr.S.Ganesh, Assistant Professor of Tamil, published an article on சிலப்பதிகாரத்தில் பாண்டிய நாடு in the journal of தொல்தமிழ், ISSN: 2347-7644, Vol.VII in October 2019.
- 42. Dr.S.Valanarasu, Assistant Professor of Physics, published an article on Deposition of p-type Al Doped PbS Thin Films for Heterostructure Solar Cell Device using Feasible Nebulizer Spray Pyrolysis Technique in the Journal of Physica B Condensed Matter, Vol.575 in October 2019.
- 43. Mr.S.Santhosh Kumar Jacob and Dr.S.Valanarasu, Assistant Professors of Physics, published an article on Improving Carrier transport in Strontium-doped Cuprous Oxide Thin Film Prepared by Nebulizer Spray Pyrolysis for Solar Cell Applications in the Indian Journal of Physics, ISSN: 0973-1458, pp.1-9 in October 2019.
- 44. Mr.S.Santhosh Kumar Jacob and Dr.S.Valanarasu, Assistant Professors of Physics, published an article on Investigation on Structural, Optical and Photovoltaic Properties of Barium Doped Cuprous Oxide thin Film by Nebulizer Spray Technique in the Journal of Material Research Express, ISSN: 2053-1591, Vol.6, No.11 in October 2019.
- 45. Dr. Nivetha Martin, Assistant Professor of Mathematics, published an article on Prioritizing the Obstacles Inbuilding Swipe and Touch Class Room Environment using Blended Method in the Journal of Interdisciplinary Cycle Research, ISSN: 0022-1945, Vol.XI, Issue.X in October 2019.
- 46. Ms.M.Sasikala,Assistant Professor of Mathematics, published an article on Premises on Fuzzy Factorizable Perfect Intrinsic Edge-Magic Graphs in the Malaya Journal of Matematik, ISSN: 2319-3786, Vol.7, No.4, pp.767-770 in October 2019.



- Ms.I.Pradeepa, Assistant Professor of Mathematics, published an article on Prioritizing the Obstacles Inbuilding Swipe and Touch Class Room Environment using Blended Method in the Journal of Interdisciplinary Cycle Research, ISSN: 0022-1945, Vol.XI, Issue.X in October 2019.
- 48. Dr.J.Xavier Adaikalaraj, Head & Associate Professor and Dr.Nivetha Martin, Assistant Professor of Mathematics, published an article on E-Commerce Inventory Model with Disruptive Technology in the Journal of Applied Science and Computations, ISSN: 1076-5131, Vol.VI, Issue: IV in 2019.
- 49. Dr.M.Paramasivan, Assistant Professor of Tamil, published an article on அகநானூறு : உரையாக்க மரபு in the International Refereed Journal of பெயல், ISSN: 2394-0948, Vol.VI, Issue.1 in October 2019.
- 50. Dr.Nivetha Martin, Assistant Professor of Mathematics, published an article on Resolving Manpower Allocation Problem using LDIFS and NEDM in the Journal of Applied Science and Computations, ISSN: 1076-5131, Vol.VI, Issue. IV in 2019.
- 51. Dr. Nivetha Martin, Assistant Professor of Mathematics, published three articles on Education and Employment are at Two Poles-A Research using Fuzzy Cognitive Linguistic Multimaps, An Inventory Model Based on Manufacturer-Direct Business Model with the Help of E-Commerce Trading and Research on Fuzzy Three Stage Tandem Queues in the International Journal of Innovative Technology and Exploring Engineering, ISSN:2278-3075, Vol.8, Issue.6S4 in 2019.
- 52. Dr.K.S.Joseph Wilson, Head and Associate Professor of Physics, published an article on Phonon Polariton Dispersion of Dielectric Superlattice at Various Pressures in Low Dimensional Systems in the Optik - International Journal for Light and Electron Optics in November 2019.
- 53. Dr.S.Valanarasu, Assistant Professor of Physics, published an article on Response to Comment on An Effect of Novel Nd³+ Doping on Physical Properties of Nebulizer Spray Pyrolysis Fabricated ZnS Thin Films for Optoelectronic Technology in the Journal of Physica B Condensed Matter, Vol.577 in November 2019.
- 54. Dr.S.Valanarasu and Mr.S.Sabastian, Assistant Professors of Physics, published an article on Microstructural and Electrical Properties Evaluation of Lead Doped Tin Sulfide Thin Films in the Journal of Sol-Gel Science and Technology in November 2019.

- 55. Dr.M.Gilbert Rani, Assistant Professor of Mathematics, published an article titled On Soft Expert Multiset Theory in the Malaya journal of Matematik in 2019.
- 56. Dr.Nivetha Martin, Assistant Professor of Mathematics, published an article on Student's Low Academic Performance Appraisal Model with Hypergraphic Approach in Fuzzy Cognitive Maps in the Journal of *Information and Computational* Science, ISSN: 1548-7741, Vol.9, Issue.8 in 2019.
- 57. Dr. Nivetha Martin, Assistant Professor of Mathematics, published an article on The Application of New Additive Ratio Assessment (NARAS) Method in Selection of Material for Optimal Design of Engineering Components in Materials Today Proceedings, Vol.11, Part.3, pp.1049-1053 in 2019.
- 58. Dr. Nivetha Martin, Assistant Professor of Mathematics, published an article on Higher Educational Institutions—the Generators of Various Genres of Entrepreneurs: A Fuzzy Cognitive Investigation in the Journal of Infokara Research, ISSN: 1021-9056, Vol.8, Issue.11 in 2019.
- 59. Dr.Nivetha Martin, Assistant Professor of Mathematics, published an article on Fuzzy Geometric Programming Approach to Food Supply Chain Model in the Journal of Test Engineering and Management, ISSN: 0193-4120, Vol.82, pp.7317-7324 in 2019.
- 60. Dr.Nivetha Martin, Assistant Professor of Mathematics, published an article on The Optimal Ordering Policy of the Retailer in Diverse Commercial Atmosphere with Permitted Delay in PaymentsModel in the Journal of Test Engineering and Management, ISSN: 0193-4120, Vol.82, pp.7325-7332 in 2020.
- 61. Dr.Nivetha Martin, Assistant Professor of Mathematics, published an article on Decision making on E-waste management methods using minimization of regret with interval-valued intuitionistic fuzzy sets in the Malaya Journal of Matematik, ISSN: 2319–3786 Vol. 8, No. 1, pp.222-224 in 2020.
- 62. Dr.M.Gilbert Rani, Assistant Professor of Mathematics, published an article on the Fuzzy Binary Soft set theory in the Journal of Interdisciplinary Cycle Research ISSN: 0022-1945, Volume XI, Issue XI, pp.264-268 in November 2019.
- 63. Dr.Nivetha Martin, Assistant Professor of Mathematics, published two articles on



- Environmental Values and Skills through Green Education for Green Society and "Role of Higher Educational Institutions in the Growth of Nonformal Sectors with Special Reference to Arul Anandar College in the *Think India Journal*, ISSN: 0971-1260, Vol.22, Issue.10 in November 2019.
- 64. Ms.M.Sasikala, Assistant Professor of Mathematics, published an article on Fuzzy Pseudo Intrinsic Edge-Magic Graphs in the Journal of Advances in Mathematics: Scientific Journal, ISSN: 1857-8365, Vol.8, No.1, pp.214-220 in 2019.
- 65. Mr.A.Gnana Arockiam, Assistant Professor of Mathematics, published an article on the Fuzzy Binary Soft set theory in the Journal of Interdisciplinary Cycle Research ISSN: 0022-1945, Volume XI, Issue XI, pp.264-268 in November 2019.
- 66. Dr.S.Jegan Karuppaiah and Fr.S.Jayaseelan, Assistant Professors of Rural Development Science, published articles on "Environmental Values and Skills through Green Education for Green Society" and "Role of Higher Educational Institutions in the Growth of Non-formal Sectors with Special Reference to Arul Anandar College" in the Think India journal, ISSN: 0971-1260, Vol.22, Issue.10 in November 2019.
- 67. Dr.P.Veerasamy, Assistant Professor of English Literature, published an article on Repercussive Effects of Civil War in Jean Arasanayagam's Selected Short Stories in the Journal of Infokara Research, ISSN:1021-9056, Vol.VIII, Issue.XI, pp.357-363 in November 2019.
- 68. Ms.R.Yogarani, Assistant Professor of Mathematics, published an article on Fuzzy Linear Programming Problem using Polynomial Penalty Meth in the Journal of Bulletin of Pure & Applied Sciences-Mathematics and Statistic, ISSN: 0970-6577, Vol.38e, Issue.1 in 2019.
- 69. Dr.K.S.Joseph Wilson, Head and Associate Professor of Physics, published an article on Investigation on Photonic Band Gap of a Magneto Photonic Crystal in the Optik International Journal for Light and Electron Optics in December 2019.
- Dr.S.Valanarasu, Assistant Professor of Physics, published an article on An Effect of Gd³⁺ Doping on Core Properties of ZnS Thin Films Prepared by Nebulizer Spray Pyrolysis (NSP) method in the Journal of Physica B Condensed Matter, Vol.574 in December 2019.
- Dr.M.Gilbert Rani, Assistant Professor of Mathematics, published an article on On Nano Bijective Soft Multiset Topological Spaces in the

- Journal of *Interdisciplinary Cycle Research*,ISSN: 0022-1945, Volume XI, Issue XII in December 2019.
- Dr.R.Gnanasekaran, Assistant Professor of English Literature, published an article on A Critique of Fluorescent Adolescents in the International Multilateral Thamizh Journal, ISSN: 2321-984X, Vol.7, No. 4 in December 2019.
- 73. Dr.R.Gnanasekaran, Assistant Professor of English Literature, published an article on ICT Enabled Education: Influx and Influence in the International Multilateral Thamizh Journal, ISSN: 2321-0737, Vol.7, No. 4 in December 2019.
- 74. Dr.A.Sebastian Mahimairaj, Assistant Professor of Rural Development Science, published an article on A Critique of Fluorescent Adolescents in the International Multilateral Thamizh Journal, ISSN: 2321-984X, Vol.7, No. 4 in December 2019.
- 75. Dr.A.Sebastian Mahimairaj, Assistant Professor of Rural Development Science, published an article on ICT Enabled Education: Influx and Influence in the International Multilateral Thamizh Journal, ISSN: 2321-0737, Vol.7, No. 4 in December 2019.
- 76. Dr.K.S.Joseph Wilson, Head and Associate Professor of Physics, published an article on Effect of ZnS Nanowire ARC on CZTS/CdS Thin Film Solar Cell by Nebulizer Spray Pyrolysis Technique in the Journal of Material Research Express ISSN: 2053-1591, Vol.7 in January 2020.
- 77. Dr.M.Gilbert Rani and Mr.A.Gnana Arockiam, Assistant Professors of Mathematics, published an article on **Binary Bitopological Spaces** in the Journal of *Our Heritage*, ISSN: 0474-9030, Vol-68, Issue.1 in January 2020.
- 78. Dr.P.Veerasamy, Assistant Professor of English Literature, published an article on published an article on What Do the Tertiary Learners Expect of Their Teachers? : An Introductory Note in the International Journal of Analytical and Experimental Modal Analysis, ISSN: 0886-9367, Vol.XII, Issue. I in January 2020.
- 79. Mr.M.Subash, Assistant Professor of English Literature, published an article on Community Learning Approach as Tool for Classroom in the Journal of Our Heritage, ISSN: 0474-9030, Vol.68, Issue.1 in January 2020.
- Dr.K.S.Joseph Wilson, Head and Associate Professor of Physics, published an article on Structural and Magnetic Properties of Cobalt Doped ZnO thin



- Films Deposited by Cost-Effective Nebulizer Spray Pyrolysis Technique in the Journal of *Material Research Express* ISSN: 2053-1591, Vol.7 in February 2020.
- 81. Dr.M.Gilbert Rani, Assistant Professor of Mathematics, published an article on On Binary Soft Multiset Theory in the International Journal of Analytical and Experimental Modal Analysis, ISSN: 0886-9367, Volume XII, Issue II in February 2020.
- 82. Dr.K.S.Joseph Wilson, Head and Associate Professor of Physics, published an article on Efficiency Enhancement of Silicon Solar Cell using Effective Interface Face Method in Antireflective Coating Layers in theInternational Journal of Modern Physics C, ISSN: 0129-1831
- 83. Dr.S.Valanarasu, Assistant Professor of Physics, published an article on An Effect of Novel Nd3 Doping on Physical Properties of Nebulizer Spray Pyrolysis Fabricated ZnS Thin Films for Optoelectronic Technology in the Journal of Physica B: Physics of Condensed Matter, ISSN: 0921-4526, Vol.572, pp.109-116 in 2019.
- 84. Dr.S.Valanarasu, Assistant Professor of Physics, published an article on Preparation and Characterization of Sol-Gel Dip Coated Al:ZnO (AZO) thin Film for Opto-Electronic Application in the Journal of Semiconductors, ISSN:1063-7826, Vol.53, No.4, pp.447-451 in 2019.
- 85. Mr.M.Subash, Assistant Professor of English Literature, published an article on Rereading Dichotomies: An Ecocritical View of William Golding's Lord of the Flies in the International Interdisciplinary Research Journal, ISSN: 2249-9598, Vol.9, Issue.2 in 2019.
- 86. Ms.P.Jerlin Rupa, Head & Assistant Professor, Ms.K.Mangayarkarasi Assistant Professor of Business Administration, published an article on Socio-Economic Implications of linking Adhaarwith Banks with special reference to Madurai District in the International Peer Reviewed Journal of Analysis and Computation, ISSN: 0973-2861in 2019.

PROCEEDINGS

 Dr.A.Shanmugaraju, Assistant Professor of Physics, published an article on "Major Activities of the Sun and Their Consequences" in the International Conference Proceedings on Advances in Physical Sciences Thailand 2019, ISBN: 978-93-86435-774 in May 2019.

- Dr. Nivetha Martin, Assistant Professor of Mathematics, published articles on "An Integrated Inventory Model with Shortages and Screening Process Under Conditions of Permissible Delay in Payments" and "Analysis of the Risk of Ebola Virus Disease: Fuzzy VIKOR Method Based on the Possibility Theory" in the 162nd The IRES International Conference Proceedings at Kuala Lumpur, Malaysia in 2019.
- Dr.K.S.Joseph Wilson, Head and Associate Professor of Physics, published two articles on "Antireflection Coating Application of Zinc Sulfide thin Films by Nebulizer Spray Pyrolysis Technique" and "Hydrothermal Synthesis and characterization of Iron/Copper/Nickel doped Lithium Niobate Particles toward Optoelectronic Applications" in the AIP Conference proceedings, ISBN: 978-0-7354-1851-6 in July 2019.
- Dr.S.Valanarasu, Assistant Professor of Physics, published an article on "Tuning the Phase of Tin Sulfide (SnxSy) Thin Films by Nebulizer Spray Pyrolysis Method" in the AIP Conference Proceedings DAE SOLID STATE PHYSICS SYMPOSIUM in July 2019.
- 5. Dr.K.S.Joseph Wilson, Head and Associate Professor of Physics, published articles on "Structural and Optical Properties of Nickel Oxide Thin Films Prepared by Simple Nebulizer Spray Technique", "Analysis of Optical Parameters of Rectangular Microstri Patch Antenna using Different Dielectric Substrates". "Analysis of Reflectance of Various DLARC systems in Solar Cells", "Cobalt Doped Zno Films as Antireflection Coating Application for Solar Cell" and "Effect of Platinum and Graphite Counter Electode in Zno Dye-Sensitized Solar Cell" in the AIP Conference Proceedings DAE SOLID STATE PHYSICS SYMPOSIUM in 2020.

CONTRIBUTION TO BOOK

- 1. Dr.A.Joseph Charlie Arockia Doss, Assistant Professor of Tamil, published an article on "பெண்ணின் பெருந்தக்க யாவுள" in the book titled புகிய கோடாங்கி in June 2019.
- 2. Dr.A.Joseph Charlie Arockia Doss, Assistant Professor of Tamil, published an article on "விடுதலை இந்தியாவின் முதல் தீவிரவாதி ஓர் இந்து அவன் பெயர் நாதுராம் கோட்சே"in the book titled புதிய கோடாங்கி in July 2019.
- 3. Dr.A.Joseph Charlie Arockia Doss, Assistant Professor of Tamil, published an article on "வாசிப்பையும் உரையாடலையும் பன்முகப்படுத்தும் தொகுப்புநூல் பன்மணித் திரள" in the book titled புதிய கோடாங்கி in September 2019.

Teachers provided with financial support to attend conferences / workshops

Year	Name of teacher	Name of conference/ workshop attended for which financial support provided	Amount of Support (in INR)
2018 - 19	Mr.R.Justin Kennedy	National Seminar on Higher education for Quality Enhancement of Teaching-Learning and Research: Challenges and Opportunities, VIT, Vellore	2360
2018 - 19	Dr. M. Arulappan	Workshop on NAAC Norms and Procedures, Bharathiyar University, Coimbatore	8236
	Dr. M. Gilbert Rani	Workshop on NAAC Norms and Procedures, Bharathiyar University, Coimbatore	
	Mr. P. Anthony Raj	Workshop on NAAC Norms and Procedures, Bharathiyar University, Coimbatore	
	Mr. R. Kather Farook	Workshop on NAAC Norms and Procedures, Bharathiyar University, Coimbatore	
	Dr. N. Murali	National Conference on Excellence in Higher Education-Explore Enhance Elevate, Loyola College, Chennai	4993
2018 – 19	Dr. I. Jeyaraj	National Conference on Excellence in Higher Education-Explore Enhance Elevate, Loyola College, Chennai	
	Dr. D. Antony Singh Dhas	National Conference on Excellence in Higher Education-Explore Enhance Elevate, Loyola College, Chennai	
2018 - 19	Dr. P. Nallathambi	National Seminar on The Contributions of Minorities to Nation Building, Andhra Loyola College	3725
2018 - 2019	Dr.A.Shanmugaraju	API-JEC International Conference on Educational Frontiers-2018 at Ateneo de Manila University	10000
2018 - 2019	Dr.S.Arul Prasad	API-JEC International Conference on Educational Frontiers-2018 at Ateneo de Manila University	10000
	Dr.S.Valanarasu	National Conference on Quality Sustenance in Higher Education Institutions, Lady Doak college, Madurai	3000
2018 - 2019	Dr.M.Gilbert Rani	National Conference on Quality Sustenance in Higher Education Institutions, Lady Doak college, Madurai	
	Mr.R.Justin Kennedy	National Conference on Quality Sustenance in Higher Education Institutions, Lady Doak college, Madurai	
	Dr. A. Shanmugaraju	State level seminar on Quality Assurance and Accreditation, Loyola College, Chennai	4286
2017 - 2018	Dr. S. Arul Prasad	State level seminar on Quality Assurance and Accreditation, Loyola College, Chennai	
	Mr. R. Justin Kennedy	State level seminar on Quality Assurance and Accreditation, Loyola College, Chennai	

Arul Anandar College (Autonomous) Internal Quality Assurance Cell Karumathur

S.No	Date	Seminar	Faculty Name	Amount (Rs)
	22 nd	National Seminar on	Mr.R.Justin Kennedy- Comp.Science	2360.00
	October	Higher Education for	(Reg.Fee=1500+ Travel=860)	
	2018	Quality Enhancement	, -0	
		of Teaching-Learning	*	
		and Research:		
		Challenges		
	-	Opportunities, VIT,		
		Vellore		
2	26 th & 27 th	Workshop on Revised	1. Dr.M.Arulappan-Dept of Philosophy	8236.00
10.0	October	NAAC Norms and	2. Dr.M.Gilbert Rani-Dept of Mathematics	
	2018	Procedures at Bharathiar University,	3. Mr.P.Anthony Raj-Dept of RDS	
			4. Mr.R.Kather Farook- Dept of IT&M	
		Coimbatore	(Reg.Fee=5000+Accommodation=2000+Travel=1236)	
3 23 rd & 24 th November 2018	23 rd & 24 th	National Seminar on	1. Dr.N.Murali-Dept of Economics	4992.94
		Excellence in Higher	2. Dr.I.Jeyaraj- Dept of Economics	
		Education at Loyola	3. Dr.D.Antony Singh Dhas - Dept of Economics	ion. P
	College, Chennai	(Reg.Fee=3000+Travel=1992.94)		
.	3 rd & 4 th	National Seminar on	Dr.P.Nallathambi- Dept. of History	3725.00
	January	The Contributions of	(Reg.Fee=2000+Travel=1725)	14.1
	2019	Minorities to Nation	*	
	- 37.55	Building at Andhra		
		Loyola College		
			. Total	19313.94

Note:

2.2.2

Advance Received

17000

Total Expenses

19313

Coordinator – IQAC

Date: 25.08.2018

From Dr.A.Shanmugaraju Coordinator, IQAC Arul Anandar College Karumathur-625 514

To

Through: Rev.Fr.Principal

Rev.Fr.Secretary Arul Anandar College Karumathur – 625-514

Dear Rev.Fr.,

 ${\bf Sub: Request\ for\ advance-Staff\ Development\ at\ Lady\ Doak\ College,\ Madurai-reg.}$

I request you to kindly grant an advance of Rs.3,000/- (Rupees three thousand only) towards the registration fee expenses of attending the National Conference on Quality Sustenance in Higher Education Institutions to be held on 6th & 7th September 2018 at Lady Doak College, Madurai. Three of our following Professors will participate in the Seminar.

- 1. Dr.S. Valanarasu, Assistant Professor in Physics
- 2. Dr.M.Gilbert Rani, Assistant Professor in Mathematics
- 3.Mr.R.Justin Kennedy, Assistant Professor and Head of Computer Science

Thanking you.

Yours Sincerely,

Dr.A.Shanmugaraju

orely,
augaraju

PRINCIPAL



ARUL ANANDAR COLLEGE INTERNAL QUALITY ASSURANCE CELL Karumathur-625 516

Date: 09.03.2018

State Level Seminar on Quality Assurance and Accreditation Loyola College, Chennai on 2nd March 2018

Staff members participated are:

- 1. Dr.A.Shanmugaraju IQAC-Coordinator
- 2. Dr.S.Arul Prasad- Dept.of RDS
- 3. Mr.R.Justin Kennedy-Dept of Comp.Science

Statement of Expenditure

	Bills Abstract		
1	Travel allowance for three staff members (Madurai to Chennai by Train)	1245	
2	Registration Fee	900	
3	Travel allowance for three staff members (Chennai to Madurai by Bus) (840+700+90+170+41)	1841	
4	Travel allowance for Auto	300	
	∕ Total R _ℓ	4286	

Note:

Advance Received Rs.
Total Expenses Rs.

Balance Rs.

7000 4286

2714

Or word

Secretary

9(3)2018

Coordinator, IQAC

From 11/08/2016

Dr.A.Shanmugaraju Coordinator, IQAC Arul Anandar College, Karumathur – 625 514

To Rev.Fr.Principal, Arul Anandar College, Karumathur – 625 514

Respected Father,

Sub: Seminar on New Education Policy at St.Joseph College, Tricy - registration fee + DA — reg.

I request you to kindly provide the registration fee (Rs.200) and PA (Rs.100) (Total 4 x Rs.300 = 1200/-) for the following four staff members who are willing to attend the "Seminar on New Education Policy at St.Joseph College, Tricy on 12th August 2016".

- 1. Ms.A.Sahaya Josephine Mary
- 2. Dr.T.Kala
- 3. Dr.M.Arulappan
- 4. Mr.J.Keba Immanuel

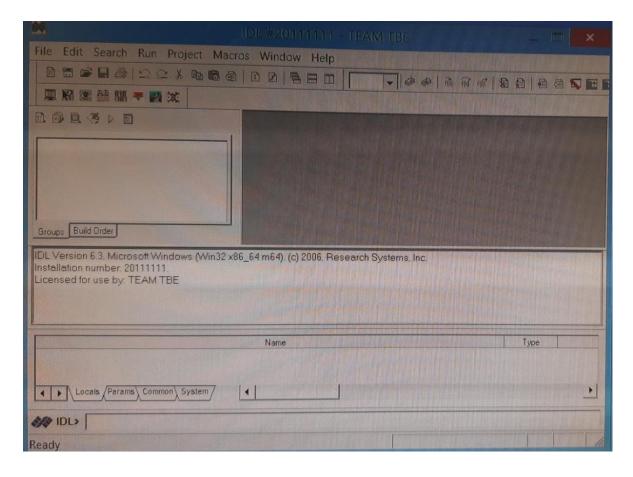
Thanking you.

Yours Faithfully,

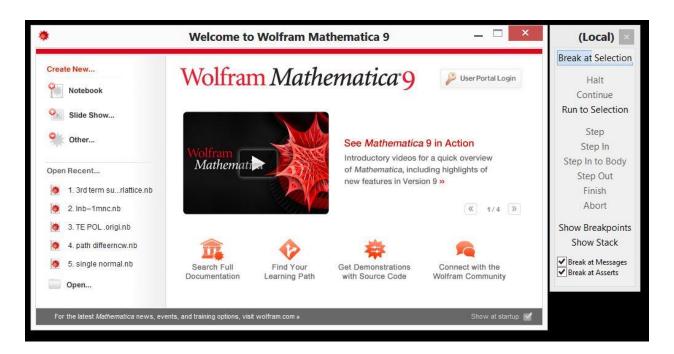
A.81

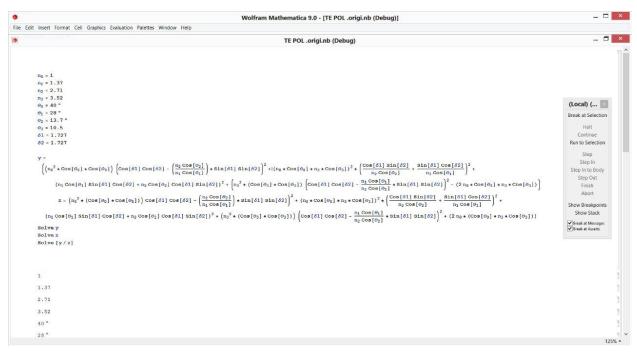
Software for Research

IDL Software

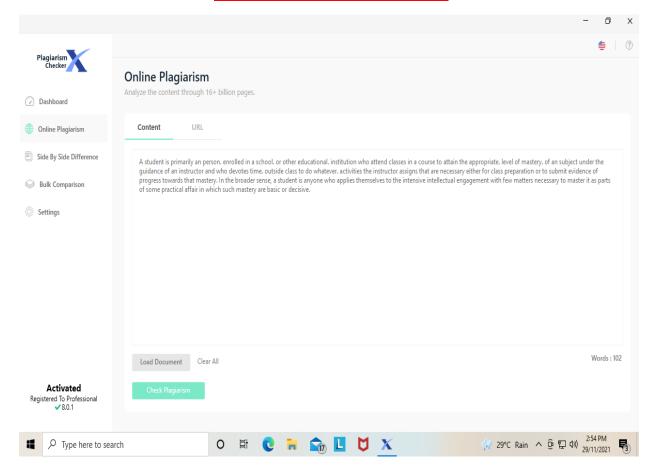


Mathamatica 9



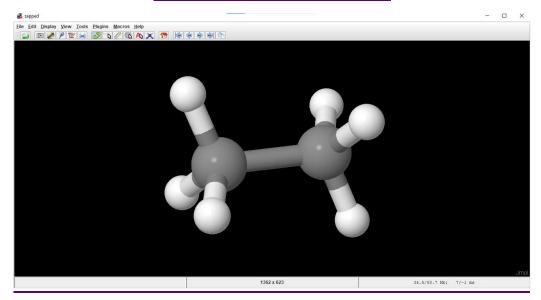


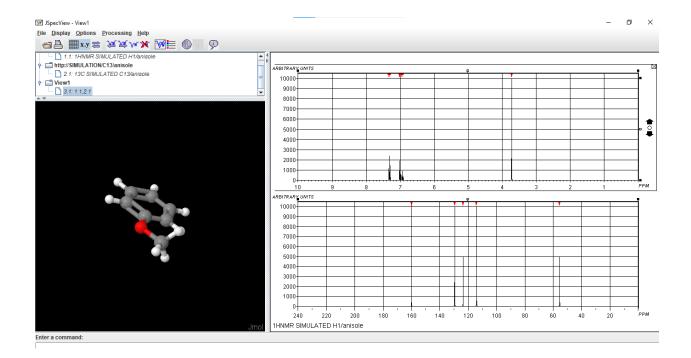
Plagiarism Checker X Software



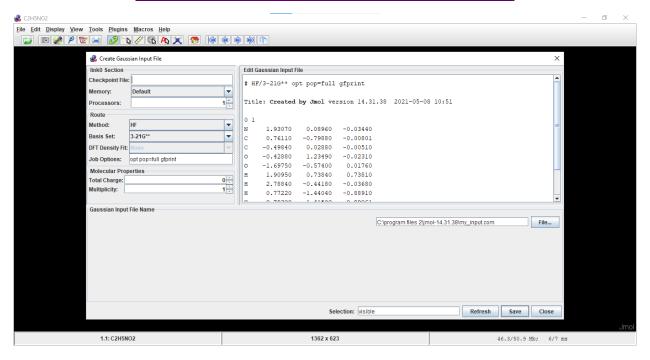
Jmol Software

3D image of Chemical Compounds





Theoratical Gaussian Calculations using Jmol Software



Research funds received by Students

TAMILNADU STATE COUNCIL FOR SCIENCE AND TECHNOLOGY **DOTE CAMPUS, CHENNAI - 600 025**

STUDENT PROJECT SCHEME 2019-2020

UTILIZATION CERTIFICATE

1.NAME AND ADDRESS OF THE GUIDE

AND ADDRESS

Dr.S.P.Malarkannan,

: Assistant Professor,

Dept. of Rural Development Science,

Arul Anandar College, Karumathur - 625 514.

2. NAME OF THE STUDENT(S)

: KISHORE.K 18RDS502

3.TITLE OF THE PROJECT

: Development of therapeutic flavoured milk incorporated with drumstick flower (Moringa oleifera) for management of diabetics and

libido

4. PROJECT CODE

: VS - 005

It is certified that a sum of Rs 7500 / (Rupees seven thousand and five hundred only) sanctioned by the council for carrying out above mentioned student project has been utilized for the purpose for which it was sanctioned and sum of Rs Nil remaining unutilized is refunded.

Assistant Professor (Animal Husbandry) Dept of Rural Development Science, Arul Anandar College, Karumathur, Madurai-625 514.

FRE OF THE ent of Rupali Development Science

SIGNATURE OF THE PRINCIPAL

(Centre for Research)

Arul Anandar College (Autonomous)

PRINCIPAL

Karumathur - 625 514., Madurai Dist. ARUL ANANDAR COLLEGE (Autonomous)

Karumathur - 625 514, Madurai Dist.

TAMILNADU STATE COUNCIL FOR SCIENCE AND TECHNOLOGY DOTE CAMPUS, CHENNAI - 600 025

STUDENT PROJECT SCHEME 2018-2019

UTILIZATION CERTIFICATE

1.NAME AND ADDRESS OF THE GUIDE

AND ADDRESS

Dr.S.P.Malarkannan,

Assistant Professor,

Dept. Of Rural Development Science,

Arul Anandar College, Karumathur - 625 514.

2. NAME OF THE STUDENT(S)

: SELVARAJ. M 17 RDS 504

3.TITLE OF THE PROJECT

: Development And Analysis Of Dietetic

Ice Cream With Natural Sweetener Palm Sugar

4. PROJECT CODE

: VS - 008

It is certified that a sum of $\underline{\text{Rs 7500}}$ (Rupees seven thousand and five hundred only) sanctioned by the council for carrying out above mentioned student project has been utilized for the purpose for which it was sanctioned and sum of $\underline{\text{Rs Nil}}$ remaining unutilized is refunded:

RE OF THE

TURE OF THE

SIGNATURE OF THE **PRINCIPAL**

With Seal Head of the Department

Bepartment of Rural Davelopment Science Arul Anandar College (Autonomous)

Arul Anandar College, Karumathur, Madurai-625 514 Phone: 04549-287221 Karumathur - 625 514 Madurai Dt,

Research Colloborations





Memorandum of Understanding for Academic Exchanges and Cooperation Between

School of Space Research, College of Applied Science, Kyung Hee University, Republic of South Korea

Post Graduate and Research Department of Physics, Arul Anandar College, Karumathur, Madurai, India

College of Applied Science, Kyung Hee University, Republic of South Korea and Arul Anandar College, India, herein after referred to as "the two Institutes," fully recognizing that academic exchanges and cooperation between the two Institutes would be beneficial to all concerned, hereby affirm their intention to encourage such academic exchanges and cooperation.

As a general declaration of intent, the two Institutes agree to act as follows:

- 1. The two Institutes will encourage the following activities:
 - 1) Exchange of faculty and research scholars;
 - Collaborative research and joint academic meetings;
 - Exchange of information, publications and materials for academic purposes;
 - Other activities mutually as may be agreed by the two Institutes.
- 2. The aforementioned activities shall be realized by means of consultation and exchange of relevant information by appropriate members of the two Institutes.
- 3. This Agreement may be amended by mutual written agreement.

4. This Agreement shall become effective immediately upon being signed by the official representatives of the two Institutes, and shall remain valid for a period of five (5) years. This Agreement may be terminated by either Institute with written notice six (6) months in advance. This Agreement may be renewed for a further period of five (5) years by mutual written consent prior to the date of expiration.

Signed by

Dr. Song-Ho Byeon

College of Applied Science

Kyung Hee University Republic of South Korea

Signed by

Rev.Fr.Godwin Rufus S.J.

Principal

Arul Anandar College

Karumathur, Madurai

18.03.2021



தமிழ்நாடு तमिलनाडु TAMILNADU 10-03-21

P. Balagurusamy Drodigul:

MEMORANDUM OF UNDERSTANDING (MoU)

BETWEEN

CH 332043

ஆர்-நூதாகிகுஷ்ணன் மத்திரைத்தாள் விற்பவனயாள நீதி மன்ற வளாகம். உஎண்: 363/ ஆ 1/2004 2டி/1 வாழ்க வள்ளுக் நேகுந், ட.டு.நி.காம்.அண்டுக் கஞ்,

DEPARTMENT OF PHYSICS G.T.N.ARTS COLLEGE (AUTONOMOUS), DINDIGUL-624 005, DINDIGUL DISTRICT, TAMILNADU, INDIA

AND

PG AND RESEARCH DEPARTMENT OF PHYSICS ARUL ANANDAR COLLEGE (AUTONOMOUS), KARUMATHUR-625 514, MADURAI DISTRICT, TAMILNADU, INDIA

G.T.N. Arts College (Autonomous) and Arul Anandar College (Autonomous) wish to establish mutual relations and agree to cooperate with each other as follows.

Cooperation shall be carried out through such activities as:

- 1. Students exchange programme
- 2. Faculty exchange programme
- 3. Organizing seminars, workshops, conferences, webinars, Guest Lectures and ucose
- meetings
- 4. Joint research activities and publications

PRINCIPAL
G.T.N. ARTS COLLEGE

2.



2023

5

Institute For Engineering Research & Publication



Unit of Technoarete Research and Development Association

MEMORANDUM OF UNDERSTANDING ("MOU")

Respected Sir,

Greetings from IFERP!!

It's our immense pleasure to get associated with your "Recent Trends in Pure and Applied Mathematics" on 19th February 2020. This letter is to intimate the agreement regarding publication of articles in SCOPUS & UGC Indexed Journal. All the accepted articles of your students will be published in the SCOPUS & UGC Indexed Journal based on the author's requirements. Here we are mentioning the Journal Details.

SCOPUS Indexed Journals:

1. Test Engineering and Management.

ISSN: 0193-4120

2. Advances in Mathematics Scientific Journal

ISSN: 1857-8365

UGC Indexed Journals:

1. Our Heritage Journal

ISSN: 0474-9030

2. Studies in Indian place Names Journal

ISSN: 2394-3114

As per the agreement, you have to ensure that the articles of around 25+ from your Conference have to be submitted for the publication in the above Journal. Further, you can contact us if you need any publishing details in Journal. Kindly provide your signature as we can proceed further with the publication.



044-42918383



Email: info@iferp.in www.iferp.in



Girija Towers, Arumbakkam, Chennai - 600106

Institute For Engineering Research & Publication

FIFERP connecting engineers... developing research

Unit of Technoarete Research and Development Association

T&C*:

- Note that plagiarism articles are strictly rejected (Must be 25% below including references.).
 (Review, Survey and case study papers may be delayed).
- 2. Fraud and copying of other article contents are prohibited.
- 3. Agreement should be confidential and to be followed accordingly.
- 4. Publication may delay on the basis of Journal maintenance.
- 5. Review reports have to be answered by the author accurately. Malpractice will not be encouraged.

Sincerely,

A. Riddth &

Director,

Mr. Siddarth

IFERP

9884078453, 9944046574

Arul Anandar College (Autonomous)

Karumathur, Tamil Nadu.

Dr. J. Xavier Adaikalaraj M.Sc.,M.Phil.,PGDCA.,Ph.D., Head & Associate Professor of Mathematics Arul Anandar College

Karumathur-625 514, Madurai District

0

044-42918383



Email: info@iferp.in www.iferp.in

Girija Towers, Arumbakkam, Chennai - 600106





MEMORANDUM OF UNDERSTANDING BETWEEN

PG & Research Department of Physics Arul Anandar College,

Karumathur, Madurai District, Tamil Nadu

PG & Research Department of Physics Jayaraj Annapackiam College for Women, Periyakulam, Theni District, Tamil Nadu

PG & Research Department of Physics, Arul Anandar College (Autonomous), Karumathur, Madurai District, Tamil Nadu and PG & Research Department of Physics, Jayaraj Annapackiam College for Women (Autonomous), Periyakulam, Theni District, Tamil Nadu hereby enter into this general agreement to foster cooperation in education and research.

- Both the institutions agree to encourage the following exchange activities based on their respective academic and educational needs.
 - Exchange of research scholars
 - Joint conferences
 - > Joint research programme
 - M.Sc students for doing projects
 - Exchange of research information and materials
- The implementation of each research programme referred above will follow the guidelines on mutual agreement by both the institution. Efforts will be made by both the institution to find financial resources for carrying out the activities listed above.
- Nothing shall diminish the full autonomy of either institution nor will any constraints be imposed by either upon the other in carrying out the agreement.
- 4. This agreement shall be in force for a period of 5 years from the date of the last signing and is subject to revision or modification by mutual agreement. It is also understood that this agreement may serve as the basis for specific agreements to be developed at a later stage. It is further understood that either institution may terminate the agreement at any time, although such action will only be taken after mutual consultation in order to avoid

- any possible inconvenience to either institution and this MOU abide by all the rules and regulations of both the colleges concerned.
- Amendment to the MOU: This memorandum of understanding may be amended in writing by mutual consent between both institutions. IN WITNESS WHEREOF the undersigned institutions have agreed and executed this document in English in two originals.

The Principal

Arul Anandar College

Karumathur, Madurai District,

Tamil Nadu.

Jayaraj Annapackiam College for Women(Autonomous)

Periyakulam, Theni District

Tamil Nadu.

Date:12-09-2019

Seal

COLLEGE ALL ON MADURAL ON MADURA ON MADURAL ON MADURAL ON MADURAL ON MADURAL ON MADURAL ON MADURA ON MADURA

Date: 12-09-2019

Seal

Principal

Jayaraj Annapackiam College
for Women (Autonomous)
Periyakulam - 625 601.
Theni District.

FOR ARUL ANANDAR COLLEGE FOR JAYARAJ ANNAPACKIAM COLLEGE

WITNESSES

Milhory

1. Dr. kes. Joseph Wilson

Head, Dept. of physics

2. Aral Ranson college.

A. 81

Dr. A. Shanmugaraju

Akkistant Prof. in Physis

1. A. Jacquiline Rogina
2. Head, Dept. of Physics

M. Asulmozhi

Dr. M. ARULMOZHI

Associate Professor of

Physics

Collaborative publications with Foreign Universities



Neutrosophic Sets and Systems, Vol. 38, 2020

University of New Mexico



Neutrosophic Optimization of Industry 4.0 Production Inventory

Model

NivethaMartin1., M.Kasi Mayan2 and Florentin Smarandache3

- 1. Department of Mathematics Arul Anandar College (Autonomous), Karumathur, India, Email: nivetha.martin710@gmail.com
 - 2. Department of Mathematics, S.B.K.College, Aruppukottai, India, Email: 1988kasu@gmail.com
 - 3. Department of Mathematics, University of New Mexico, Gallup, NM 87301, USA, Email: smarand@unm.edu

* Correspondence: nivetha.martin710@gmail.com

Abstract: In this age of information, the industrial sectors are embedding its functioning principles with the components of Industry 4.0. This article proposes a production inventory model discussing the paradigm shift towards smart production process involving many new cost parameters in addition to the conventional inventory costs. The proposed Industry 4.0 production inventory model is discoursed and compared in both deterministic and neutrosophic environments. The trapezoidal neutrosophic number representation of the parameters enhances the efficiency of the model in determining the optimal order time that minimizes the total costs. The model is highly comprehensive in nature and it is validated with a numerical example.

Keywords: Neutrosophic sets, Industry 4.0, production inventory model, optimization, decision making.

1. Introduction

Presently the industrial sectors are incorporating the techniques of digitalization to meet the requirements of the customer's demands at all ends. The production sectors practice new production methods to ease the process of production that comprises of several sequential steps and new cost parameters. The optimizing principle of manufacturing companies is costs minimization and profit maximization and the inventory models are utilized to make optimal decisions on order time and quantity. The Economic Production Quantity (EPQ) model proposed by Taft [1], a basic production inventory model to manage the levels of inventory by the production sectors. This model is the underlying model and it was developed and extended based on decision-making situations. The fundamental EPQ model was further modified with the integration of the cost parameters of shortages, trade discount, imperfect items, supply chain, deteriorating items, remanufacturing, waste disposal and so on. The production inventory models are extended to cater the requirements of the production sectors. Presently, the fourth industrial revolution is gaining significance amidst the developed and developing nations. Industry 4.0 will certainly bring a paradigm transition at all the levels of organization and control over the different stages of the product's life. The entire process of product production beginning from product conception, product design, product development,

NivethaMartin, M. Kasi Mayan and Florentin Smarandache, Neutrosophic Optimization of Industry 4.0 Production Inventory Model



Contents lists available at ScienceDirect

Surfaces and Interfaces

journal homepage: www.elsevier.com/locate/surfin



Functionalization effect of HAp with copper (Cu) having excellent dielectric applications



K. Poovendran^a, <mark>K.S. Joseph Wilson^{a, ...}, M.S. Revathy^b, A. Ayeshamariam^{c,d,} ., K. Kaviyarasu^{c,f}</mark>

- ^a PG and Research Department of Physics, <mark>Arul Anandar College (Aut</mark>onomous), Karumathur, Madurai 625514, Tamil Nadu, India
- b School of Advanced Sciences, Kalasalingam Academy of Research and Education, Krishnankoil, Virudhunagar 626128, Tamil Nadu, India
- Department of Physics, Khadir Mohideen College, Adirampattinam 614701, Tamilnadu, India
- ^d Research and Development Centre, Bharathiyar University, Coimbatore 641046, Tamilnadu, India
- UNESCO-UNISA Africa Chair in Nanosciences/Nanotechnology Laboratories, College of Graduate Studies, University of South Africa (UNISA), Muckleneuk Ridge, P.O. Box 392, Pretoria, South Atrice
- Nanosciences African network (NANOAFNET), Materials Research Group (MRG), iThemba LABS-National Research Foundation (NRF), 1 Old Faure Road, 7129, P O Box 722, Somerset West, Western Cape Province, South Africa

ARTICLEINFO

Keywords: HAp Cu Impedance Electron microscopy

ABSTRACT

Hydroxyapatite (HAp) is a prominent biomaterial with high biocompatibility, bioactivity and osteoconductivity. Cu-HAp is synthesized by co-precipitation technique. The samples were characterized by using XRD to analyze the compositional changes and the determination of particle size and phase composition analyzing. A Rietveld enhancement showed that the Cu metal ions doped with HAp does not affect the hexagonal unit cell. The functional groups are identified with the help of FTIR, exterior morphological studies were analyzed via TEM & SEM, and elemental analysis by EDX. The morphology of doped HAp is rod like shape which is examined by using TEM and irregular shape in SEM analysis after grinding the Cu-HAp samples. The dielectric constant, and capacitance are studied by using impedance. The dielectric constant and capacitance value decreases with the decrease of temperature.

1. Introduction

Apatite is the name of large minerals with calcium phosphate relatives and makes it ultimate for medical and non-medical applications. Hydroxyapatite, also called hydroxyl apatite [Ca10(PO4)6(OH)2]. HAp holds the highest mineral element to human teeth and bones since the developed bone consists of 60-70% of HAp [1]. Noble and transition metals regularly Pd, Pt, Ru, Rh, Ir, Ni, Co, Zr & Fe have been widely examined on various supports and they possess high catalytic activity on methane [2]. Nowadays magnetic nanoparticles play a powerful part in diverse applications such as magnetic resonance imaging (MRI), cell separation, drug delivery and to accelerate the body temperature for the hypothermia treatment of cancers. By electrical stimulation HAp has tens the healing of bone fractures.

Cobalt mixed with vitamin B12 plays a dynamic role in the expansion of red blood cells [3]. The synthetic HAp exhibits two crystalline structures; one is a hexagonal structure (space group P63/m, Z=2) with unit cell parameters of a = 9.4302 Å; $c = 6.8911 \text{ Å } \& \gamma = 120^{\circ}$ and another one is a monoclinic structure (space group P21/b, Z = 4) with unit cell parameters of a = 9.84214 Å; b = 2a; c = 6.8814 Å & γ = 120° A structural phase change is possible from monoclinic to the hexagonal arrangement [4-8]. In common, both structures are expressed in terms of the system $[PO_4]^{3-}$ tetrahedral anions prepared along the c-axis, with Ca^{2+} cations in the interstitial site. -OH position is the main fluctuation between the hexagonal and monoclinic structures. Moreover, the monoclinic crystal arrangement is the composition of hydroxyl ions "in planes parallel to a- and c-axes, the orienting direction alternating between straight parallel planes" [9] and the growth of the triangular cluster of oxygen atoms where the hydroxyl ion is approximately centered.

2. Materials and methods

The copper-doped hydroxyapatite (Cu-HAp) powder is prepared by a co-precipitation method using calcium nitrate (E-Merck 99.99%), ammonium dihydrogen orthophosphate (E-Merck 99.99%) and copper nitrate (E-Merck 99.99%). It is prepared as a solution by taking 10-X moles of calcium nitrate dissolved with appropriate demineralized

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Superlattices and Microstructures

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Enhancement of optoelectronic properties of ZnO thin films by Al doping for photodetector applications

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A study on radio-loud interacting/non-interacting CMEs-associated SEPs and solar flares

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Abstract

We have established a data set of 58 major hybrid SEP events associated with meter-to-decahectometer wavelength (m-to-DH) type II bursts, solar flares, and radio-load CMEs during the period of 1997–2014. The main focus of our study is to address the following two questions: Does the interaction of CMEs play a role in the enhancement of SEP intensity? Is there any difference in the seed population, and parent eruptions in the SEP events with and without CME interactions? Hence, the sample of 58 events is classified into two sets: (i) 35 non-interacting-CME-associated SEP events, (ii) 23 interacting-CME-associated SEP events. All the characteristics of SEPs, their associated CMEs/flares and the relationships between them are statistically analyzed and compared. Some of the basic attributes and relative elemental abundances (Fe/O ratios) of the both the sets are also compared. The results indicate that the seed particles in non-interacting-CME-associated SEP events, it may be associated with both flare material from preceding flares and coronal materials from solar wind/preceding CMEs. The correlation studies reveal that there are clear correlations between logarithmic peak intensity of SEP events and properties of CMEs (space speed: cc = 0.56) and solar flares (peak intensity: cc = 0.40; integrated flux: cc = 0.52) for non-interacting-CME-associated SEP events. But these correlations are absent for the interacting-CME-associated events. In addition, the results suggest that interaction of primary CMEs with their preceding CMEs plays an important role in the enhancement of peak intensity of SEPs at least for a set of m-to-DH type II bursts associated SEP events.

Keywords: Solar energetic particle events (SEPs); Radio-loud coronal mass ejections; Solar flares; m-to-DH type II radio bursts

1. Introduction

Solar energetic particles (SEPs) are hot plasma particles accelerated in the corona or in the interplanetary (IP) medium to very high energies of up to GeV. They are one of the

major concerns of space weather (Bothmer and Daglis, 2007). Many authors classified these particle events into two categories depending on the accelerating mechanisms (Cane et al. 1986. Kallenrode, 2003; Reames, 1999, 2013): the short-lived impulsive SEP events are thought to be originated from sudden explosive solar flares (Aschwanden, 2002; Anastasiadis, 2002; Klein and Posner, 2005) and large gradual SEP events are associated with coronal mass ejection (CME) driven shocks (Reames,

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Influence of carrier gas pressure on nebulizer spray deposited tin disulfide thin films

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Abstract

Tin disulfide (SnS₂) thin films deposited using by nebulizer spray pyrolysis method (NSP) with different carrier gas pressure (as 0.078, 0.068 and 0.058 Pa) at 325 °C is reported. The prepared films were characterized by X-ray diffraction, Raman spectrum, scanning electron microscopy, atomic force microscopy, EDAX, UV-Vis spectroscopy and photoluminescence analysis. Electrical properties study done by Hall effect measurements for the films deposited at various carrier gas pressures is also reported. Structural and surface morphological analyses showed highly crystalline pure phase of SnS₂ thin films with relatively low surface roughness. Hall measurements revealed that the conductivity and mobility are in the range from 0.00007 to 15 (Ω^{-1} cm⁻¹) and 16 to 37 (cm² Vs⁻¹), respectively. These results suggest that, using the optimized carrier gas pressure and other nebulizer spray parameters such as substrate temperature and nebulizer nozzle to substrate distance, a device quality conformal deposition of tin disulfide thin film which is essential for the thin film solar cell structures can be prepared using NSP method.

1 Introduction

Tin disulfide (SnS₂), an IV-VI group semiconducting chalcogenide is considered as one of the most successful materials for optoelectronic and photovoltaic applications [1]. Albeit it's excellent achievements, some of its problems remain to be solved. There are a lot of concerns of cadmium, gallium, and indium based devices on environmental suitability, availability, and toxicity [2]. Comparing with the other inorganic compound semiconductors, SnS₂ is more suitable for solar cell and other applications. SnS₂ exhibits PbI₂ layered hexagonal crystal structure [3] with *n*-type electrical conductivity and band gap in the range 2.12–2.44 eV. This is a suitable material to use as the window layer in the solar cells [4]. SnS₂ also have excellent electrical and optical

properties which are beneficial to devices such as bipolar junction transistors, thermal actuators and photo conducting devices [5, 6]. Tin and sulfur which make SnS₂ are abundant, low-cost and non-toxic, hence are useful to fabricate low-cost photovoltaic cell [7]. Many reports on SnS₂ thin films prepared by several physical and chemical thin film preparation methods such as plasma-enhanced chemical vapor deposition (PE-CVD) [4], ultrasonic spray [8], SILAR [9], spray pyrolysis [10], chemical bath deposition [11, 12], co-evaporation [13], thermal evaporation [14], electrodeposition [15] and atmospheric pressure CVD [16] are available. Even though the nebulizer spray pyrolysis (NSP) technique is widely used, it is an adaptable and affordable method for the preparation of thin films at a maximum temperature up to 500 °C.

Most commonly, the surface of the conventional spray deposited films have rough surfaces due to complexity in restraining all the process parameters of spray pyrolysis and uniformity in the size of the spray droplets. However, using the NSP method, smooth surfaces can be produced, which is suitable for devices having perfect junctions in between the layers. Nevertheless, the quality of the films again depends on the spray parameters, especially the carrier gas pressure, since this is the second main process parameter in NSP after the substrate temperature. As the carrier gas pressure changes the spray parameters such

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Abstract

A set of 58 Coronal Mass Ejections (CMEs) with different kinematics near the sun in LASCO Field of view (FOV) is classified into two groups (i) CMEs which are accelerating (group-I) and (ii) CMEs which are decelerating (group-II). We analyze their interplanetary propagation characteristics to study the distinction between these two groups of events. Some of the following deviations are noted between the two groups as: (i) While group-II events have greater mean values of Standoff distance, Standoff time than the group-I events, the mean transit times of ICMEs and IP shocks are relatively lower for them. (ii) Group-II events are more (30%) radio-rich than the group-I (10%) and they are associated with type II solar radio burst in lower corona. (iii) The possibility of having excess magnetic energy that supports the propagation of CMEs to some extent is studied using estimated speed (V_{EST}) and it is found that a slightly more number of events in group-I (48%) has V_{EST} > V_{LASCO} than group-II (33%). (iv) Net interplanetary acceleration is positive for 35% and 19% in group-I and group-II events respectively. (v) It is also found that ICME/IP shock characteristics of the two groups depend strongly on the CME acceleration.

Keywords CME · ICME · IP shock

1 Introduction

Coronal mass ejections (CMEs) are large-scale plasma structures that erupt from closed magnetic field regions on the sun and travel through ambient medium. During its propagation, it interacts with the solar wind and causes fast mode magneto hydrodynamic

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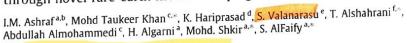
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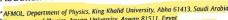
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Enhancement in photodetection properties of Ag/CdS/Ag devices through novel rare-earth metal Tb doping





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ABSTRACT

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Herein, the effect of Terbium (Tb) doping on the photodetection properties of Ag/CdS/Ag devices have been elucidated. An enhancement in the photodetector performance was noted for Ag/Tb@CdS/Ag device in terms of amplified sensitivity of 592, improved responsivity of 3.64 A/W, and excellent detectivity of 6.39 × 10¹² Jones in compared to pure Ag/CdS/Ag device with respective values of 192, 0.24 A/W and 7.98×10^{11} Jones. Moreover, the Tb-doped device exhibits a faster response time of 30 ms as compared 1.96 × 10 Julies, indicover, the ro-doped device exhibits a react response time to 421 ms for device with pure CdS. The enhancement in photodetector performance was explained to 421 ms for device with pure CdS. The enhancement in photodetector performance was explained through the change in conduction mechanism from Schottky in Ag/CdS/Ag to ohmic in Ag/Tb@CdS/Ag

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1. Introduction

Owing to excellent optoelectrical properties, the photodetectors based on CdS nanostructures have displayed superior sensitivity and a fast response time in compare with other nanostructured photodetectors. Three types of CdS photodetectors have been reported according to the metal-semiconductor contact viz., ohmic contact, Schottky contact and field effect transistor (FET) configuration [1]. The photodetectors with FET structure have better sensitivity (-106) [2], whereas, photodetector with ohmic contact shows fast response time (~20 µs) [3]. The performance of photodetector with Schottky contact exhibits intermediate performance with sensitivity of 200 and response time of 240 ms [4]. Although, photodetector with FET configuration exhibits better performance, however, the device fabrication with ohmic/Schottky contact is simplistic and cost effective.

In recent years, the doping of semiconductors with rare earth ions have been extensively reported and the obtained results

shows improved optical and electrical properties of semiconducting nanostructures. Herein, we have elucidated the impact of Tbdoping on the photodetection properties of CdS thin films.

2. Experimental details

2.1. Film fabrication and characterization

CdS thin films with 0, 1, 3 and 5 wt% Tb-doping were fabricated via spray pyrolysis method as reported previously [5] by replacing Samarium (III) acetate with Terbium (III) acetate (Tb(O2C2H3)3xH2O). All films were deposited at 450 °C, with spray rate of 5 ml/min and distance between the substrate and spray nozzle was kept ~50 mm. On top of the deposited films, lateral silver electrodes were deposited via sputtering as shown in Fig. 1(a). PAN analytical X' Pert PRO X-ray diffractometer (XRD) was used to identify the CdS phase and DXR FT-Raman system was used to record vibrational spectra of fabricated films. Absorption, transmittance & reflectance spectra were measured using a double-beam V-570 UV-Vis-NIR Spectrophotometer. The photodetector devices were characterized by measuring current-voltage (I-V) characteristics both in dark and under illumination using Keithley-2450 system with an accuracy of ±5%.

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Name of inventor(s):



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Title of invention:

DESIGN AND DEVELOPMENT OF SOLAR POWER BASED ELECTRIC VEHICLE CHARGING BOOTHS

Name of inventor(s):

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Term of Patent:

Eight years from 1 December 2020

NOTE: This Innovation Patent cannot be enforced unless and until it has been examined by the Commissioner of Patents and a Certificate of Examination has been issued. See sections 120(1A) and 129A of the Patents Act 1990, set out on the reverse of this document.



Dated this 17th day of March 2021

Commissioner of Patents