



# SANATANA DHARMA COLLEGE

ALAPPUZHA

Affiliated to the University of Kerala  
Reaccredited by NAAC with A+ grade



CRITERION: 6

## Governance, Leadership and Management

6.3.1

- **PBAS**
- **CAS**
- **Promotion orders**
- **FDPs Organised by the Institution**



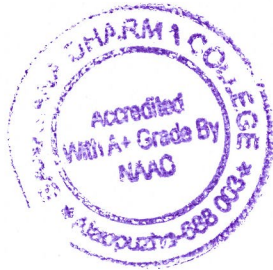
# SANATANA DHARMA COLLEGE

## ALAPPUZHA

### DECLARATION

The following file contains

1. Performance Based Appraisal System forms and Promotion orders of Teaching Staff
2. Career Advancement Scheme forms and Promotion orders of Non-teaching Staff
3. Details of FDPs provided by the institution



  
Principal

Prof. (Dr.) PREMA K.H  
PRINCIPAL  
PEN 487693  
S D COLLEGE ALAPPUZHA

**30 Aug 2018 – 29 Aug 2019**



**UNIVERSITY OF KERALA**

**Annual Self-Assessment for the Performance Based  
Appraisal System (PBAS) for Option A**

(As Per UGC (Minimum Qualifications for Appointment of Teachers and Other Academic Staff in Colleges and Measures for the Maintenance of Standards in Higher Education) Regulations, 2018: Option A)

**Session/Year: 30 Aug 2018 – 29 Aug 2019**

**PART A: GENERAL INFORMATION**

1.	Name (In Block Letters)	: SREEKANTH J. VARMA
2.	Father's Name	: JAYACHANDRA VARMA K.
3.	Department	: PHYSICS
4.	Current designation & Grade Pay	: ASSISTANT PROFESSOR, Level 11 (AGP 7000)
5.	Date of last promotion	: 30-August-2017
6.	To which Position and Grade pay are you an applicant under CAS	: ASSISTANT PROFESSOR, Level 12 (AGP 8000)
7.	Date of eligibility for promotion	: 30-August-2022
8.	Date and Place of Birth	: 10-Nov-1981; Cherthala
9.	Sex	: MALE
10.	Marital Status	: MARRIED
11.	Nationality	: INDIAN
12.	Indicate whether belongs to SC/ST/OBC Category	: GENERAL
13.	Address for correspondence (with Pin code)	: Sreevalsam, Thirunalloor, Cherthala, Alappuzha - 688541
14.	Permanent Address (with Pin code)	: 'Same as above'
15.	Telephone No:	+91-9496179724
16.	Email	sjv@sdcollege.in

**17. Academic Qualifications (Matric till post-graduation):**

Examinations	Name of the Board/ University	Year of Passing	% of Marks obtained	Division/ Class/ Grade	Subject
10 <sup>th</sup>	CBSE/AISSCE	1997	70.40	I	NA
12 <sup>th</sup>	CBSE/AISSE	1999	63.80	I	Bio-Maths
B.Sc.	University of Kerala	2002	87.7	I class with distinction	Physics
M.Sc.	Mahatma Gandhi University	2004	75.00	I	Physics



**18. Research Degree(s):**

Degree	Title	Date of Award	University
Ph.D	Investigations on polyaniline based systems for technologically important applications and some novel polymers as prospective candidates for fabricating polymer light emitting diodes	29-Dec-2012	Cochin University of Science & Technology

**19. Appointments held prior to joining this institution**

Designation	Name of employer	Date of		Salary with Grade	Reason of leaving
		Joining	Leaving		

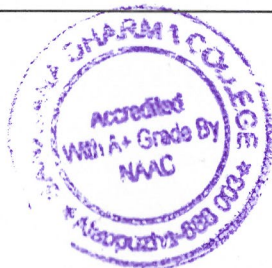
**20. Posts held after appointment at this institution**

Designation	Department	Date of actual Joining		Grade
		From	To	
Assistant Professor Stage I	Department of Physics, Sanatana Dharma College	30-Aug-2013	29-Aug-2017	Assistant Professor AGP 6000
Research Scientist (Raman PDF, UGC On-duty)	NanoScience Technology Center, University of Central Florida, FL, USA	29-July-2016	28-July-2017	Postdoc
Assistant Professor Stage II	Department of Physics, Sanatana Dharma College	30-Aug-2017	29-Aug-2019	Assistant Professor AGP 7000

21. Period of teaching experience : 06 years (UG & PG)
22. Research Experience excluding years spend in Ph.D (in years) : 06 years 3 months
23. Field of specialization under the Subject/Discipline : Physics, Materials Science, Supercapacitors, Wearable Devices

**24. Academic Staff College Orientation/Refresher Course attended:**

Name of the Course /Summer School	Place	Duration	Sponsoring Agency
Smart Nanomaterials: Fundamentals to Applications (SNFA-2019)	NIT Calicut	25-29 March 2019	MHRD, Govt. of India



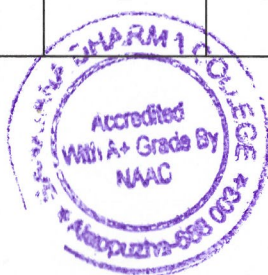
**PART B: ASSESSMENT CRITERIA FOR ACADEMIC/RESEARCH SCORE**

(Please see detailed instruction of this PBAS Proforma before filling out this section)

**CATEGORY: 1. TEACHING AND LEARNING RELATED ACTIVITIES**

**I a. Lectures, Seminars, Tutorials, Practicals, Contact Hours (give Semester-wise details, where necessary)**

Sl.No	Course/Paper	Level	Mode of teaching*	No. of classes per Week allotted	No. of classes conducted per Week	% of Classes/ Pract. taken as per documented record
<b>ODD SEMESTER</b>						
01.	PY 211- Classical Mechanics	S1 MSc	L	2	2	100
02.	PY 241 - Advanced Spectroscopy	S3 MSc	L	2	2	100
03.	PY 1551.2 - Astronomy & Astrophysics	S5 (OC)	L	1	1	100
04	PY1542 - Quantum Mechanics	S5 (Core)	L	1	1	100
05.	PY1331.1- Optics, Magnetism & Electricity	S3 Mathematics (Complementary)	L	1	1	100
06.	PY1141 - Basic Mechanics & Properties of Matter	S1 (Core)	L	1	1	100
07.	PY1442- Mechanics, Properties of matter, Error measurements, Heat and Acoustics	S3 (Core)	P	1	1	100
08.	PY1432-Practical	S3 Chemistry (Complementary)	P	1	1	100
09.	PY1432-Practical	S1 Mathematics (Complementary)	P	2	2	100
10.	PY1442- Basic Physics Lab 1	S1 (Core)	P	2	2	100
<b>EVEN SEMESTER</b>						
01.	PH 221- Modern Optics and Electromagnetic Theory	S2 MSc	L	2	2	100



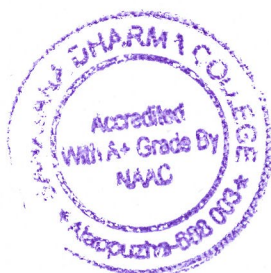
**UGC Regulation 2018 : Option A**

02.	PH 242 - Nuclear and Particle Physics	S4 MSc	L	2	2	100
03.	PY1642 - Nuclear & Particle Physics	S6 (Core)	L	2	2	100
04.	PY1431-Modern Physics & Electronics	S4 Mathematics (Complementary)	L	1	1	100
05.	PY1241- Heat & Thermodynamics	S2 (Core)	L	1	1	100
06.	PY1442- Mechanics, Properties of matter, Error measurements, Heat and Acoustics	S4 (Core)	P	1	1	100
07.	PY1432-Practical	S4 Chemistry (Complementary)	P	1	1	100
08.	PY1432-Practical	S2 Mathematics (Complementary)	P	2	2	100
09.	PY1442- Basic Physics Lab 1	S2 (Core)	P	2	2	100
<b>TOTAL</b>						<b>100</b>
“Good” for 80% and above performance. “Satisfactory” for 70 % to 80% performance. “Not satisfactory” for less than 70% (Department Time table/Statement of class engaged by teacher attested by Principal or HOD)					<b>Grade</b>	<b>GOOD</b>

\*Lecture (L), Seminar (S), Tutorial (T), Practical (P), Contact Hours (C)

**OVER ALL GRADE FOR CRITERIA I : GOOD**

□ Good : 80% and above performance.  
 Satisfactory : 70 % to 80% performance.  
 Not satisfactory : less than 70% performance



**CATEGORY: II. INVOLVEMENT IN THE UNIVERSITY/COLLEGE  
STUDENTS RELATED ACTIVITIES/RESEARCH  
ACTIVITIES**

**A. Administrative responsibilities**

Sl.No	Type of Responsibility	Role Performed
01	Department Research Committee	Convener
02	DST-FIST	Project Implementation Group
03	KSCSTE-SARD	Coordinator
04	S1 & S2 UG (Physics): Tutor	Teacher-in-charge
Total number of activities		04 (Four)

**B. Examination and evaluation duties assigned by the college/university or attending paper evaluation**

Sl.No	Name of Duty	Role Performed
01	University Examinations	Invigilator
02	Internal Examinations	Invigilator
03	Internal Examinations	Question paper setter
04	Internal Examinations	Evaluation
05	University Examinations	Evaluation
06	University Practical Examinations	Examiner
07	University Malpractice Prevention Squad	Member
08	MSc Photonics (ISP, CUSAT): Advanced Solid-State	Question paper setter
Total number of activities		08 (Eight)

**C. Student related co-curricular, extension and field -based activities**

Sl.No	Type of Activity	Role Performed
01	JRF Appointment, Christian College, Chengannur	Subject expert
02	Walk-with-a-scholar	Mentor
03	Student Tour	Accompanying Staff
Total number of activities		03 (Three)

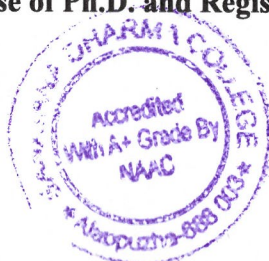
**D. Organizing seminars/conferences/workshops and other college/university activities**

Sl.No	Type of Activity	Role Performed
01		
Total number of activities		0

**E. Evidence of actively involved in guiding Ph. D./ M.Phil. students**

Sl.No	Name of Student	Date of Registration (For Ph.D. only)	U.O granting Registration*
01	Aruna Raj	27-06-2018	AcEVI(4)/118/PHY/16890/2018 dated 26-07-2018
02	Manju V.	30-06-2018	AcEVI(4)/118/PHY/17008/2018 dated 20-07-2018
Total number of students			02 (Two)

\* U.O granting registration in the case of Ph.D. and Registration No. in the case of M.Phil.





**F. Details of minor/major research project sponsored by national or international agencies.**

Sl.No	Name of the project	Funding Agency	Amount sanctioned/utilized
01			
Total number of projects			0

**G. Details of Publication in peer-reviewed or UGC or University listed journals**

Sl. No.	Title with page Nos.	Journal	UGC/ University/ ISSN/ISBN No	Whether peer reviewed or not	No. of Co-authors	Whether you are the main Author
01	Reflux Pretreatment Mediated Sonication: A New Universal Route to obtain 2D Quantum Dots	Materials Today (Impact factor: 31.041)	1369-7021	Peer-reviewed	17	No
02	Effective Electromagnetic Shield using Conductive Polyaniline Films	Materials Today: Proceedings	2214-7853	Peer-reviewed	02	Yes, Corr. author
03	Rapid Nanofabrication of Nanostructured Interdigitated Electrodes (nIDEs) for Long-Term in vitro Analysis of Human Induced Pluripotent Stem Cell Differentiated Cardiomyocytes	Biosensors (Impact factor: 5.743)	2079-6374	Peer-reviewed	05	No
Total number of publications						03 (Three)

**OVER ALL GRADE FOR CRITERIA II: GOOD**

- Good : Involved in at least 03 activities  
 Satisfactory : Involved in 01 – 02 activities  
 Not satisfactory : Not involved / undertaken any of the activities

Number of activities can be within or across the broad categories of activities



IV. SUMMAY OF ASSESSMENT

Session/Year: 2018-19

Criteria		Grade/Score
I	Teaching and Learning related activities	GOOD
II	Involvement in the University/College students related activities/Research activities	GOOD
III	Research and Academic contribution	NA



**PART C : OTHER RELEVANT INFORMATION**

Please give details of any other credential, significant contributions, awards received etc. not mentioned earlier.

Sl. No.	Details (Mention Year, Value etc. where relevant)

**LIST OF ENCLOSURES:** (Please attach copies of Certificates, sanction orders, papers etc. wherever necessary)

01.	Department timetable
02.	Copy of Short-term FDP
03.	Certificate from the Principal for Category I & II
04.	Copy of the duty certificate: University Malpractice Prevention Squad
05.	Copy of the appointment order: MSc Photonics (ISP, CUSAT): Advanced Solid-State Theory
06.	Copy of the duty certificate: Subject expert, JRF Appointment, Christian College, Chengannur
07.	Journal 1
08.	Journal 2
09.	Journal 3

I certify that the information provided is correct as per records available with the University and/or documents enclosed along with the duly filled PBAS Proforma.

Alappuzha

\_\_\_ / \_\_\_ / 2022

Signature of the Faculty with Designation

**Signature of HOD/School Chairperson/Principal**

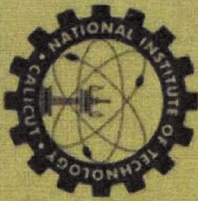
NB: The Annual Self-Assessment Proforma duly filled along with all enclosures submitted for CAS promotions will be verified by the University/College and information filed with the IQAC.



DEPARTMENT OF PHYSICS:- TIMETABLE FOR THE YEAR 2018-19						
DAY	CLASS	HOURL 1	HOURL 2	HOURL 3	HOURL 4	HOURL 5
MONDAY	S1/S2 PG	RC	X2	SRR	MV	TRS
	S3/S4 PG	MV	TRS	SL	SKP	X1
	S5/S6 UG	SJV	RC	SKP	PRACTICALS RC,TRS,EGS RC,SRR,X2	
	OTHERS	I PHY SL	I MATHS X1		II MATHS SJV	I CHEM EGS
			II PHY SRR			
			II CHEM PRACTICALS EGS,SJV,MV		EGS,X1,X2	
TUESDAY	S1/S2 PG	SRR	X2	TRS	SJV	RC
	S3/S4 PG	.....PRACTICALS.....SL.....				
	S5/S6 UG	MV	SRR	MV	X1	SKP
	OTHERS	II MATHS SKP	I PHY SJV			II CHEM X2
					II PHY PRACTICALS SRR,SKP,X2 SRR,SJV,MV	
WEDNESDAY	S1/S2 PG	SRR	SJV	MV	SKP	X1
	S3/S4 PG	SKP	RC	X1	PRACTICAL SL	
	S5/S6 UG	EGS	TRS	SL	PRACTICALS RC,X1,X2 RC,EGS,SRR	
	OTHERS				II CHEM EGS	II MATHS X2
THURSDAY	S1/S2 PG	.....PRACTICALS TRS.....				
	S3/S4 PG	EGS	SJV	MV	SL	EGS
	S5/S6 UG	SL	SRR	X2	PRACTICALS RC,X2,SRR RC,X2,MV	
	OTHERS	II PHY RC	II MATHS PRACTICALS		I CHEM MV	
			SKP,X2,EGS,X1	SKP,RC,SRR,,X2		
		II CHEM MV	1	2	I MATHS PRACTICALS X1,EGS,SJV,SKP X1,SJV,SRR,SKP	
FRIDAY	S1/S2 PG	SKP	SL	X1	PRACTICAL TRS	
	S3/S4 PG	SJV	RC	TRS	SRR	SL
	S5/S6 UG	RC	X1	EGS	SJV	X2
	OTHERS		I PHY PRACTICALS SJV,MV,TRS		SJV,SKP,MV	
			II PHY SKP		I CHEM PRACTICALS MV, X1, EGS MV, X1, EGS	
			I MATHS X2			

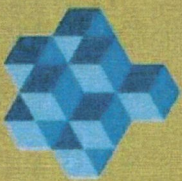
TRS: Dr.T.R.Sherly; SL: Dr.S.Lekshmi; SKP: Dr.Sreejith K.Pisharady; RC: Dr.Rakesh Chandran S.B; SRR: Dr.Rajesh S.R.; MV: Manju V.; SJV: Dr.Sreekanth J.Varma; EGS: E.G.Sudhamani; X1: Guest faculty 1; X2: Guest faculty 2





**Smart Nanomaterials:  
Fundamentals to  
Applications (SNFA-2019)**

25-29 March 2019



School of Materials Science & Engineering

**National Institute of Technology Calicut**  
NIT Campus P.O. KOZHIKODE – 673601, KERALA, INDIA  
MHRD Sponsored Faculty Development Programme

**Certificate**

This is to certify that

**Dr. SREEKANTH. J. VARMA**

**ട്രീനിംഗ് ഓഫീസർ, കോളേജ്, അറ്റാച്ച്മെന്റ്, കേരളം-688003**  
has successfully completed the Faculty Development Programme on  
**Smart Nanomaterials: Fundamentals to Applications (SNFA-2019)**  
during 25-29 March 2019 organized by the

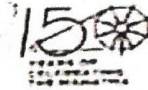
School of Materials Science and Engineering, National Institute of Technology Calicut

**Dr Subramanyan N. Varanakkottu**  
Coordinator

**Dr Soney Varghese**  
Coordinator

**Dr N. Sandhyarani**  
Head of the Department





# UNIVERSITY OF KERALA

Thiruvananthapuram, Kerala, India - 695 034  
(Re-accredited by NAAC with 'A' Grade)

(Established as University of Travancore by the Travancore University Act in 1937 and reconstituted as University of Kerala by the Kerala University Act of 1957 and presently governed by the

Kerala University Act of 1974 passed by the Kerala State Legislative Assembly)

No:M&C.I.3/1890/2019

Thiruvananthapuram,  
Date:12.07.2019

## DUTY CERTIFICATE

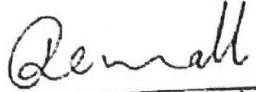
Certified that Dr. Sreekanth J Varma, Assistant Professor, Dept. of Physics, SD College, Alappuzha was on examination duty for the days detailed below as the *Member of the Malpractice Prevention Squad* constituted by the University of Kerala for *Alappuzha-Pathanamthitta District* for the period from 08.04.2019 to 22.05.2019 & 30.05.2019 to 26.06.2019.

### Duty Days:

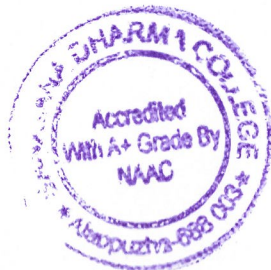
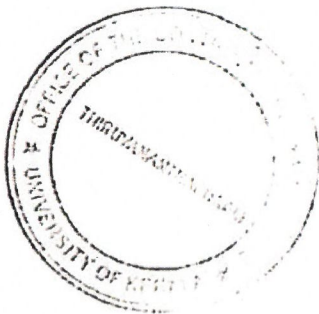
April (2019):8, 10, 12, 25, 26,27, (Intervening holiday: 28), 29, 30

May (2019): 3, (Intervening holidays: 4, 5) 6, 7, 8, 9, 10, (Intervening holidays: 11, 12), 13, 14, 15, 16, 17, (Intervening holidays: 18, 19), 20, 21, 22, 31

**TOTAL** : 30 days

  
DEPUTY REGISTRAR  
MB/M&C

For CONTROLLER OF EXAMINATIONS





## UNIVERSITY OF KERALA

Thiruvananthapuram, Kerala, India - 695 034

(Re-accredited by NAAC with 'A' Grade)

(Established as University of Travancore by the Travancore University Act in 1937 and reconstituted as University of Kerala by the Kerala University Act of 1957 and presently governed by the Kerala University Act of 1974 passed by the Kerala State Legislative Assembly)

No:M&C.I.3/1890/2019

Thiruvananthapuram,

Date: 18.06.2019

### DUTY CERTIFICATE

Certified that Dr. Sreekanth J Varma, Assistant Professor, Dept. of Physics, SD College, Alappuzha was on examination duty for the days detailed below as the *Member of the Malpractice Prevention Squad* constituted by the University of Kerala for *Alappuzha-Pathanamthitta District* for the period from 30.05.2019 to 26.06.2019.

#### Duty Days:

June (2019): 6, 7, 10, 12, 14

**TOTAL** : 5 days



*Senall*

DEPUTY REGISTRAR

69 / 177 / 2

For CONTROLLER OF EXAMINATIONS



COCHIN UNIVERSITY OF SCIENCE AND TECHNOLOGY  
Cochin University P.O., Kochi - 682 022.

RADHAKRISHNAN K.T  
DEPUTY REGISTRAR (EXAMS) II



Date : 29.09.2018  
Phone: 0484 2575112

Email: deputyregistrarexams2@cusat.ac.in

**CONFIDENTIAL**

Sir/Madam,

I am to inform you that you have been appointed as Question Paper Setter for the subject mentioned below.

I request you to kindly accept this offer and extend your service to conduct the examination. Your acceptance may please be intimated in the form enclosed, specifying your correct address. If it is not possible for you to accept the offer, please send a reply immediately and the return of all enclosures sent herewith, will be appreciated.

The typewritten question paper set may please be enclosed in the green envelope and forwarded in the cloth lined cover to **Dr. Sunil K Narayanankutty, Controller of Examinations, Cochin University of Science and Technology, Kochi-682022** by Registered Post/Speed post not later than the date mentioned below.

Please ensure that the Title of the Question Paper set by you is the same as in the title sheet provided along with the appointment letter. Also the Question Paper (green cover) should be enclosed in the yellow cover specifying the reference number.

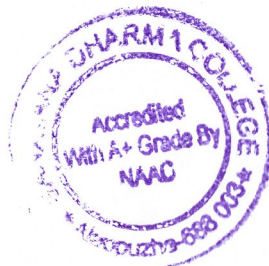
The Syllabus, Stationery, model question papers etc., are enclosed. Remuneration for setting Question paper is **900/-** (per set).

Ref : EE1/542/2018  
Name of Examination : M.Sc ( 5 Year Integrated ) in Photonics, VII Semester Examination in November 2018  
Subject : CEL 2701 Advanced Solid State Theory (prior to 2013 admission)  
Last Date : **VERY URGENT**

Yours Sincerely,

**DEPUTY REGISTRAR (EXAMS II)**

To  
Dr. Sreekanth Varma  
Sanatana Dharma  
College , Alapuzha  
Kerala - 688 003  
PH : 949617972







# CHRISTIAN COLLEGE, CHENGANNUR

(NAAC Reaccredited A Grade College)

ANGADICAL SOUTH P.O., CHENGANNUR-689122, KERALA, INDIA


CC. No. 205/2017-2018

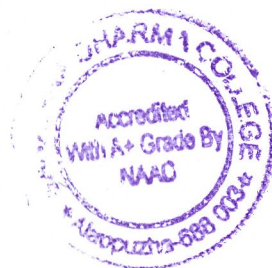
Dt: 22-12-2018

## DUTY CERTIFICATE

This is to certify that Dr. Sreekanth J Varma, Assistant Professor, Department of Physics, SD College, Allapuzha served as the external subject expert for the interview held on 22.12.2018 at the Research Centre, Department of Physics, Christian College, Chengannur for the post of Junior Research fellow in the research project funded by Department of Environment and Climate Change, Government of Kerala



  
Dr. Achamma Alex  
പ്രിൻസിപ്പാൾ  
ക്രിസ്ത്യൻ കോളേജ്  
ചെങ്ങന്നൂർ





# Reflux pretreatment-mediated sonication: A new universal route to obtain 2D quantum dots

Yang Liu<sup>1,2,3,†</sup>, Chenglu Liang<sup>1,2,†</sup>, Jingjie Wu<sup>4,\*</sup>, Sreekanth J. Varma<sup>5,6</sup>, Yusuke Nakanishi<sup>1</sup>, Amir Aliyan<sup>7</sup>, Angel A. Martí<sup>7</sup>, Yan Wang<sup>8</sup>, Banghu Xie<sup>2</sup>, Jitesh Kumar<sup>6</sup>, Katherine Layne<sup>6</sup>, Nitin Chopra<sup>9</sup>, Ihab Odeh<sup>9</sup>, Robert Vajtai<sup>1</sup>, Jayan Thomas<sup>6</sup>, Xiangfang Peng<sup>3</sup>, Wei Yang<sup>2,\*</sup>, Pulickel M. Ajayan<sup>1,\*</sup>

<sup>1</sup> Department of Materials Science and NanoEngineering, Rice University, 6100 Main Street, Houston, TX 77005, United States

<sup>2</sup> College of Polymer Science and Engineering, Sichuan University, State Key Laboratory of Polymer Materials Engineering, Chengdu 610065, Sichuan, China

<sup>3</sup> Department of Materials Science and Engineering, Fujian University of Technology, Fuzhou 350108, Fujian, China

<sup>4</sup> Department of Chemical and Environmental Engineering, University of Cincinnati, Cincinnati, OH 45221, United States

<sup>5</sup> Department of Physics, Sanatana Dharma College, Alappuzha, Kerala 688003, India

<sup>6</sup> NanoScience Technology Center, University of Central Florida, Orlando, FL 32826, United States

<sup>7</sup> Department of Chemistry, Rice University, 6100 Main Street, Houston, TX 77005, United States

<sup>8</sup> School of Materials Science and Engineering, Hefei University of Technology, Hefei 230009, PR China

<sup>9</sup> SABIC (Saudi Basic Industries Corporation), Sugar Land, TX 77478, United States

Although quantum dots (QDs) based on two dimensional (2D) materials have manifested fascinating properties and promising applications in a wide range of fields, a low cost and non-tedious approach for the preparation of atomically thick 2D QDs with high yield remains elusive. Herein, for the first time, we demonstrate a reflux pretreatment-mediated sonication approach to produce a series of ultrathin 2D QDs (e.g., graphene, TiS<sub>2</sub>, MoS<sub>2</sub>, MoSe<sub>2</sub>, WSe<sub>2</sub>, NbS<sub>2</sub>, SnS<sub>2</sub>, and h-BN QDs) from their bulk counterparts. The solvent molecules, confined in the channels of layered materials during reflux, assist the delamination and fracture of 2D sheets in the process of bath sonication. The resulting 2D QDs exhibited uniform lateral size distribution of 2–7 nm and a mean thickness of 0.8–1 nm, almost identical to the monolayer thickness of layered materials. To demonstrate the unique property of these 2D QDs, the optical limiting activity was studied using open aperture z-scan technique. TiS<sub>2</sub> QDs exhibited appreciable nonlinear optical limiting, reaching 50% by a tapered and sharp absorption at input laser fluence of 4.24 GW/cm<sup>2</sup>.

## Introduction

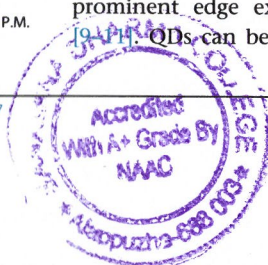
Since graphene was successfully prepared by mechanical exfoliation in 2004 [1], two-dimensional (2D) nanomaterials, including transition metal dichalcogenides (TMDs, e.g., MoS<sub>2</sub>, WS<sub>2</sub>) [2–4], hexagonal boron nitride (h-BN) [5], graphitic carbon nitride

(g-C<sub>3</sub>N<sub>4</sub>) [6], and black phosphorous [7], have attracted tremendous attention in the past decade. These outcomes have led to the elucidation of the laminar structures of layered materials and fundamental understanding of their layer-dependent properties [8]. When these 2D materials are transformed into quantum dots (QDs, lateral sizes being typically smaller than 10 nm), unique physicochemical properties are observed due to prominent edge exposure and quantum confinement effect [9]. 2D QDs can be potentially applied in photodetectors [12],

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ICMEE 2018

# Effective Electromagnetic Shield using Conductive Polyaniline Films

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## Abstract

The present work is focused on the impressive electromagnetic shielding effectiveness of doped polyaniline films in the C and X bands of the electromagnetic spectrum. The observed value of shielding effectiveness of about 37dB is found to depend on the electrical conductivity and crystallinity of the films. The films synthesised by self-stabilised dispersion polymerisation are found to be crystalline with appreciable electrical conductivity as evident from the structural and morphological characterizations. The interesting feature is that most of the literature available on the shielding effectiveness of polyaniline is restricted to thicker films. The values reported here for the C and X bands comply with the commercial standards and are quite appreciable for micrometre thick films

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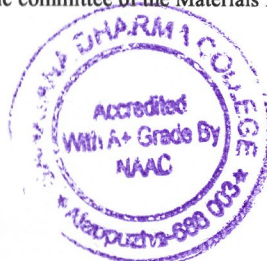
**Keywords:** Electromagnetic Shielding, Doped polyaniline films,

## 1. Introduction:

The rapid developments in science and technology have improved the standards of human living beyond imagination. As with any development, there are, however negative implications that need to be addressed. One of such issues is that due to the unwanted effects of electromagnetic interference. Electromagnetic interference or EMI in short, is a kind of silent pollution that poses threat to the smooth functioning of electronic devices. The origin of

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Communication

# Rapid Nanofabrication of Nanostructured Interdigitated Electrodes (nIDEs) for Long-Term In Vitro Analysis of Human Induced Pluripotent Stem Cell Differentiated Cardiomyocytes

Cacie Hart <sup>1,2</sup>, Avra Kundu <sup>2</sup>, Kowsik Kumar <sup>1,2</sup>, Sreekanth J. Varma <sup>2,3</sup>, Jayan Thomas <sup>1,2,4</sup> and Swaminathan Rajaraman <sup>1,2,5,6,\*</sup>

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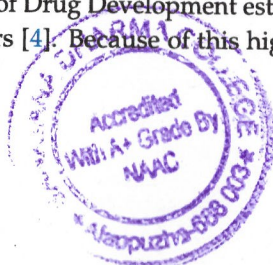


**Abstract:** Adverse cardiac events are a major cause of late-stage drug development withdrawals. Improved in vitro systems for predicting cardiotoxicity are of great interest to prevent these events and to reduce the expenses involved in the introduction of cardiac drugs into the marketplace. Interdigitated electrodes (IDEs) affixed with a culture well provide a simple, suitable solution for in vitro analysis of cells because of their high sensitivity, ease of fabrication, and label-free, nondestructive analysis. Culturing human pluripotent stem cell differentiated cardiomyocytes onto these IDEs allows for the use of the IDE–cell combination in predictive toxicity assays. IDEs with smaller interdigitated distances allow for greater sensitivity, but typically require cleanroom fabrication. In this communication, we report the definition of a simple IDE geometry on a printed nanostructured substrate, demonstrate a Cellular Index (CI) increase from 0 to 7.7 for human cardiomyocytes, and a decrease in CI from 2.3 to 1 with increased concentration of the model drug, norepinephrine. The nanostructuring results in an increased sensitivity of our 1 mm pitch IDEs when compared to traditionally fabricated IDEs with a pitch of 10  $\mu\text{m}$  (100 times larger electrode gap). The entire nanostructured IDE (nIDE) is fabricated and assembled in a rapid nanofabrication environment, thus allowing for iterative design changes and robust fabrication of devices.

**Keywords:** nanostructured Interdigitated Electrodes; shadow mask; cardiomyocytes; in vitro cellular analysis

## 1. Introduction

Drug-induced cardiotoxicity accounts for one-third of safety-based withdrawn pharmaceuticals, making it the number one cause of drug withdrawal, limitation, and development termination [1–3]. As of 2016, the Tufts Center for the Study of Drug Development estimates the cost of developing a new drug is on average 2.89 billion US dollars [4]. Because of this high cost, improved in vitro systems



**Sanatana Dharma College, Alappuzha**  
Annual administrative Staff Appraisal and Evaluation (to be submitted at the end of every academic year)

Period of Appraisal (2023-2024.....)

1 Name (in Block letters)		
2 Name of father/mother	Vikas P. PANIEKER	R. Purushothama Panicker
3	Family of spouse	
Name of spouse	Aswathy Gopan	Job if any UP School Teacher SDVGHs Alappuzha.
Name of children	Aadhya Vikas	Job/class LKG - Student.



4	Date and Place birth	31/10/1986 - Alappuzha		
5	Date of joining service	01/09/2015	Present designation	Clerk.
6	Address for communication with PINCODE	Kottarathil, Kottamkulagga, Punnamedu road, Avaloorkunnu. P.O Alappuzha.		
7	Mobile No :	9961114647	Another contact name & number in case of emergency	
8	Email	Vikasppanickal@31@gmail.com	Blood group	AB+
9	Qualifications	Bcom		
10	Department test cleared with year	MOP, Account Test (Low)		
11	Areas of interest			
12	Achievements received			



1. Additional Qualifications acquired (if any awarded during the evaluation period):

	Diploma/ Degree/PG	University/Board	Date of award			
1	Qualifications Bcom	University of Kerala.	2007			
2	Department test cleared	Attender test	MOP	Account test lower	Account test higher	Date of award
			✓	✓		

2. Attendance & leave

Casual leaves availed in the year	19
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3. Details of Training Programs attended

Duration	Details
89. one day	Spate




4. Involvement in institutional Management/social activities

No	Area	Name of the Committee/ Organization
1	College Committees	
2	Involvement in social activities	Secretary, SD college Employees Co-operative Credit Societies

5. Summary of staff Member's Job Responsibilities (Brief job Description)

PI

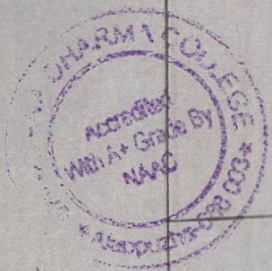


6. Administrative Performance Indicators :

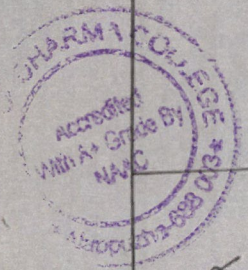
a. Job Knowledge And Skills	1	2	3	4	5
Technical skills related to job					✓
Computer skills					✓



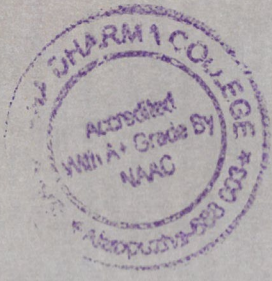
b. Quality of performance			
Neatness, attention to detail			✓
Maintains quality in both slow and peak times			✓
C. Quantity of performance			
Completes tasks in a timely manner			✓
Effectively uses time			✓
d. Self-management			
Attendance & Punctuality			✓
Maintenance of Registers and Records keeping			✓
e. Customer Service			
Approachability and Promptly responds to inquiries and requests			✓



b. Quality of performance			
Neatness, attention to detail			✓
Maintains quality in both slow and peak times			✓
C. Quantity of performance			
Completes tasks in a timely manner			✓
Effectively uses time			✓
d. Self-management			
Attendance & Punctuality			✓
Maintenance of Registers and Records keeping			✓
e. Customer Service			
Approachability and Promptly responds to inquiries and requests			✓



Treats parents and visitors with courtesy and respect					
F. Team support					
Accepts suggestions and criticism in a positive manner					
Treats others with dignity, fairness, and respect					
6. Other Relevant information					



**Criteria for assessment**

- 1 Needs Development : Reflects a fundamental or beginning level of performance and needs continued development
- 2 Developing : Reflects progress and is approaching job mastery
- 3 Satisfactory : Has achieved satisfactory mastery of job requirements
- 4 Advanced : Has detailed knowledge of the job and exceeds expectations.
- 5 Outstanding : Highest level of performance

**Declaration**

I certify that the information provided above is correct

Place : *S. D. collage*

Date : *26.06.2024*

Name and signature

*VR Prasad*  
*VRas. P. Parideel*

**Evaluation Report by higher authorities**

SL No.	Particulars	Evaluation Remarks
1	Job Knowledge and skills	
2	Quality of Performance	
3	Quantity of Performance	
4	Self-Management	
5	Customer Service	
6	Team Support	



Other Relevant Remarks:

Remarks by the Principal :

Overall performance is Good

Signature with name and Designation

*S. Senthil Kumar*  
S

Signature with date

*P. Senthil Kumar*





# SANATANA DHARMA COLLEGE

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www.sdcollege.in, e-mail : sanatanamalp@gmail.com

Ref E1/TS/AL 09/2023

Date 31.10.2023.....

## FORM 1

(See Statute 13 and 47)

### Appointment / Promotion Order

Dr. Veena J, Associate Professor Academic Level 13A of Hindi is promoted as Professor Academic Level 14 under this educational agency on a pay of Rs. 153000/- in the scale of 144200 - 218200 in the Sanatana Dharma College Alappuzha w.e.f 01-09-2022 subject to the provisions of Kerala University Act, 1974 and the statutes, ordinances and regulations made there under and such other rules and orders issued from time to time by the University of Kerala or by such other authority who may be competent to issue such rules, orders etc. under the said statutes.



For SANATANA DHARMA COLLEGE

*D. K. Kumar*

MANAGER MANAGER





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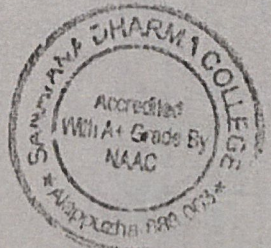
## റേറ്റം 1

(സ്റ്റാറ്റ്യൂട്ട് 13,47)

### തസ്തികമാറ്റ ഉത്തരവ്

സനാതന ധർമ്മ കോളേജിലെ എൽ.ഡി.സ്റ്റോർ കീപ്പറായിരുന്ന ശ്രീ.വികാസ്.പി.പണിക്കർ-നെ ഈ കോളേജിലെ ക്ലാർക്കായിരുന്ന ശ്രീ.പി.ജയചന്ദ്രനെ സീനിയർ ക്ലാർക്കായി സ്ഥാനക്കയറ്റം നൽകിയ ഒഴിവിൽ 01/06/2020 പൂർവ്വാഹ്നം മുതൽ 19000-500-20000-550-22200-500-25200-650-27800-700-29900-800-33900-900-37500-19000-42500-1100-43600 ശമ്പള സ്കെയിലിൽ 20550/- രൂപ അടിസ്ഥാന ശമ്പളത്തോടുകൂടി ക്ലാർക്കായി തസ്തിക മാറ്റം നൽകിയിരിക്കുന്നു. ഈ തസ്തിക മാറ്റം കേരള സർവ്വകലാശാല സ്റ്റാറ്റ്യൂട്ട്, 1974-ലെ ആക്റ്റ് എന്നിവയിലെ നിബന്ധനകൾക്കും, സമയാസമയങ്ങളിൽ കേരള സർവ്വകലാശാലയോ മറ്റ് അധികാരപ്പെട്ട കേന്ദ്രങ്ങളോ യൂണിവേഴ്സിറ്റിയുടെ സ്റ്റാറ്റ്യൂട്ട്, 1974-ലെ ആക്റ്റ് എന്നിവയ്ക്ക് വിധേയമായി പുറപ്പെടുവിക്കുന്ന ഓർഡറുകൾ, വ്യവസ്ഥകൾ, മറ്റ് നിതമാവലികൾ, ഉത്തരവുകൾ എന്നിവയ്ക്ക് വിധേയമായിരിക്കും.

JK  
18.10.22  
CS  
20/10/22  
11/12



For SANATANA DHARMA COLLEGE

*J. K. Kumar*

മാനേജർ MANAGER