

01.02.2019

2.00 pm

# **KARPAGAM ACADEMY OF HIGHER EDUCATION**

(Deemed to be University) (Established Under Section 3 of UGC Act, 1956) Eachanari Post, Coimbatore-641021.Tamilnadu,India. FACULTY OF ARTS, SCIENCE AND HUMANITIES **DEPARTMENT OF PHYSICS** 

# Awareness of trends in technology

# <u>(</u>2018-19)

		Semin	lecture/ Industrial visit/ ar/Workshop /Hands on ng / others	Seminar		
		Details Theme	s of the program (Topic /	National Seminar or and Applications	n Advanced Materials	
		Acade	mic year	2018-2019		
		Semes	ter	Even		
		Numbe	er of Students participated	300		
			of the agencies involved ill contact details	КАНЕ		
		Name	of the Resource person	Dr.R.T. Rajendra Ku Dr.S.Jayakumar, Dr. Prem Nazeer	,	
		Venue		MBA Seminar Hall		
		Date o YYYY	f implementation (DD-MM-	31.1.2019 to 1.2.2019	•	
Date	נ	Time	Name of the Resource pe	erson	Торіс	2S
31-1-2019	10.0	)0 am	Dr.R.T. Rajendra Kumar, As Department of Nanoscience Bharathiar University, Coim	and Technology,	Recent trends in na	notechnology
31-1-2019	2.00	) pm	Dr.S.Jayakumar, Professor & of Technology & Applied R		Advanced materials and research in thin films	
01.02.2019	10.0	)0 am	Dr.S.Arumugam, Professor, Physics, The Gandhigram R Gandhigram.	, Department of ural Institute,	Solar pond and di	stillation unit

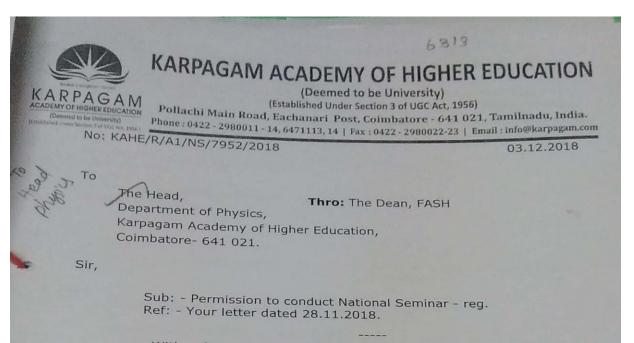
Applications of thin film

Dr.K. Prem Nazeer, Principal, Dr. SNS

Coimbatore

Rajalakshmi College of Arts and Science,

## **Approval Letter**



With reference to your letter cited, I am by direction to inform you that permission is granted to your Department to conduct a National Seminar on "Advanced Materials and Applications" on 31<sup>st</sup> January and 1 February, 2019. Your Budget proposal as detailed below has been approved. Further, a sum of Rs.20,000/- has been sanctioned from the management. You are also requested to try to reduce the expenditure.

#### Budget

Expected Income: Rs.46,000/-Expected Expenditure: Rs.78,500/-

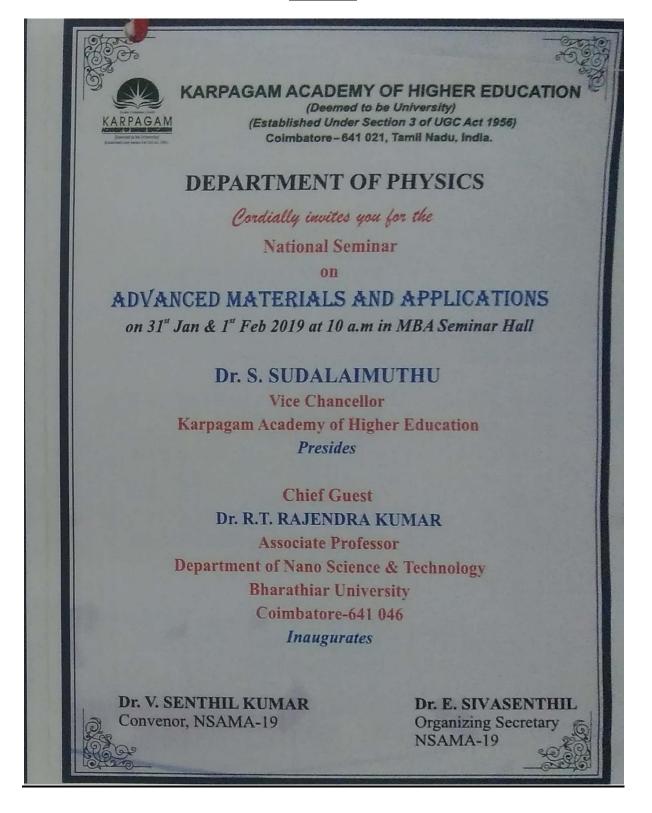
REGISTRAR

#### Copy to

- 1. The Vice-Chancellor's table
- 2. Accounts' Department (Original sanction letter is enclosed)
- 3. The Director, IQAC

Web : www.kahedu.edu

## **Invitation**



#### **Brochure**



#### Profile of Dr.R.T. Rajendra Kumar

Designation: Professor Department of Nanoscience and Technology

Telephone: 0422-2428425 Mobile: +91-9789757888 e-mail: rtrkumar@buc.edu.in Website: http://amdl-bu.org/



#### **Current Area of Research**

- 1. 2D materials
- 2. Bio-chemical Sensors
- 3. Water remediation

SCOPUS	6507429167	Researcher	A-9709-2015	<b>Google</b> Sch	Ep-	VIDWAN ID:	52003
ID:		ID:		olar ID:	pJa8AAAAJ		

#### Education

Ph.D. (2003) - Physics, Bharathiar University, India M.Sc. (1998)- Physics, P.S.G. College of Arts and Science, Coimbatore, India

#### Professional Experience (In Chronological Order after Ph. D. onwards)

**Designation:**Professor, Department of Nanoscience and Technology, Bharathiar University, India, (2015 onwards)

- Professor, Department of Nanoscience and Technology, Bharathiar University, India -(Feb.2015onwards)
- Associate Professor, Department of Nanoscience and Technology, Bharathiar University,- (Jan.2013-Jan.2015)
- Associate Professor, Department of Physics, Bharathiar University (Feb.2012 Jan.2013)
- Reader, Department of Physics, Bharathiar University, Bharathiar University (Feb.2009 - Feb.2012)
- Postdoctoral Researcher, Department of Micro and Nanotechnology, Technical University of Denmark (Jan.2007 - Jul.2008)
- Postdoctoral Researcher, School of Physical Sciences, Dublin City University, Dublin, Ireland (May2005 - Dec.2006)
- Postdoctoral Researcher, Atomic Physics Division, Stockholm University, Sweden (Apr.2003 - Mar.2005)

Additional Responsibilities (In BharathiarUnivrsity)

Joint Director, DRDO-BU-CLS, Bharathiar University - (Feb.2014 onwards)

#### Awards/Fellowship

- RSC Sustainable Energy & Fuels poster prize at International Conference on Nano for Energy and Water (NEW 2017)
- Fellow of Academy of Sciences, 2016

- > DAE- BRNS Young Scientist Research Award, 2012
- "Best Faculty Award" presented by Nehru Group of Institutions, 2012
- 2<sup>nd</sup> Prize, Poster, International Conference on Nanomaterials 2012, Kottayam, India
- Poster Award in the 55<sup>th</sup> DAE Solid State Physics Symposium, 'Morphology dependent Photocatalytic degradation of ZnO nanoparticles', 26 to 30 Dec 2010
- Best Paper Award in National Conference on Recent Advances in Magnetic Materials and Applications (MAGMA 2010) Jan 2010
- "International Visiting award", Dublin City University (2010)
- 'Outstanding Young Person Award', Junior Chamber International India, Erode Texcity, 2008
- Nominated for "President of Ireland Young Researcher Award" by Dublin City University, 2006

## **Foreign Countries Visited:**

- Germany
- Italy
- Israel
- China
- Singapore

## **Sponsored Projects**

#### Completed

- Fabrication of ZnOnanorods/polymer hetero-junction for solar cell application, DST NanoMission (2011-2014) Rs. 29,87,400.
- Investigation of interfacial charge transfer aspects of hybrid polymer/ZnOnanorod arrays as an initial step towards judging their potential for nano-light emitting devices (NANOLED), DST – Indo-Ireland Bilateral Project (2011-2013) Rs. 3,07,000.
- Influence of Swift Heavy Ion Irradiation on the structural and Magnetic Properties of Galfenol (Fe<sub>1-x</sub>Ga<sub>x</sub>) Thin Films, UGC – IUAC (2012-2015) Rs. 6,03,000.
- Wetting control and electro-wetting properties of superhydrophobic Si nanostructures, DAE-BRNS Young Scientist Research Award (2012-2015) Rs. 14,35,000.
- Synthesis and characterization of reduced graphene oxide for gas sensing applications, DST SERB Fast Track (2012-2015) Rs. 28,00,000.
- Development of carbon nanostructure based nano-biosensors, DRDO Project, (2014-2017) Rs. 25,00,000/-

## Ongoing

- Metal Organic functionalised 2D MoS2, WS2 based electronic nose towards selective detection of disease related Volatile Organic Compounds, DST – SERB (2018-2021), Rs. 39,00,000/-
- Synthesis and characterization of Zinc ferrite / Titanosilicate nanocomposites for the removal of Cs and Sr, UGC – DAE-CSR (2017-2020), Rs. 1,35,000/-
- Swift Heavy Ion Irradiation effects on the texture, microstructural Piezoelectric properties of reactive sputtered Aluminum Nitride thin films, UGC-IUAC (2018-2021), Rs. 6,07,000/-

# **Research Guidance**

Ph.D. :	Completed – 8;	Ongoing - 6;
M. Phil. :	Completed -17;	Ongoing – 0
M. Sc. : 26	PG Diploma – 45	

# **Research Publications**

Journals: International:95 National: 1 Reports: 9 Conference Papers(Presented): International :15 National: 5 Books : Nil Book Chapters :4

# Citation

Total Number of Citations : 2232 (as on 03/2020);

h-index – 27

# **Five Significant/Recent Publications**

Highly sensitive amperometric detection of glutamate by glutamic oxidase immobilized Pt Nanoparticle decorated multiwalled carbon nanotubes (MWCNTs)/Polypyrrole composite, DebasisMaity, R.T. Rajendra Kumar, Biosensors and Bioelectronics, **130** 307–314(2019)

Polyaniline Anchored MWCNTs on Fabric for High Performance Wearable Ammonia Sensor, DebasisMaity and R.T. Rajendra Kumar, ACS Sensors, **3 (9)**, 1822–1830(2018)

Polyvinyl alcohol wrapped multiwall carbon nanotube (MWCNTs) network on fabrics for wearable room temperature ethanol sensor, D Maity, K Rajavel, R.T. RajendraKumar, Sensors and Actuators B: Chemical **261**, 297-306(2018)

Multiwalled Carbon Nanotube Oxygen Sensor: Enhanced oxygen sensitivity at room temperature and Mechanism of Sensing, K. Rajavel, M.Lalitha, J.K. Radhakrishnan, L. Senthilkumar, R.T. Rajendrakumar, ACS Applied Materials and Interfaces, 7 (43), 23857–23865(2015)

Effective Shell Wall Thickness of Vertically Aligned ZnO-ZnS Core-Shell Nanorod Arrays on Visible Photocatalytic and Photo Sensing Properties, K. S. Ranjith, R. B. Castillo, Mika Sillanpaa, **R.T. Rajendra Kumar**, Applied Catalysis B: Environmental, 237, 128-139(2018)

1.	Name and Address	:	S. Jayakumar "Piriyyam" No 11 Ashok Layout Civil Aerodrome Road Coimbatore 641 014
2.	Date of Birth	:	08.11.51
3.	Institution	:	PSG College of Technology
4.	Designation & Department	:	Professor, Applied Science
5.	Field of Specialisation	:	Thin Film Solar Cells, Shape Memory Alloys Plasma surface modification, Ferroelectric Composites Nano Composites, MEMS,

6. Academic Qualification :

MSc, MPhil, PhD

#### 7. Previous Experience:

Name of the College /	Designation	Date of	Date of	Experience			
Industrial	Designation	Joining	Relieving	Years	Months	Days	
	Professor	01.06.2010	17-06-2014	4	-	16	
	Professor	28.05.2004	30.05.2010	6	-	2	
PSG College of Technology	Asst. Professor	01.11.2000	27.05.2004	3	6	26	
	Lecturer(SlG)	01.01.1993	31.10.2000	7	9	13	
	Lecturer(Sr.G)	01.01.1986	31.12.1992	6	11	13	
	Associate Lecturer	22.08.1979	31.12.1985	6	4	9	
	Demonstrator	18.06.1976	21.08.1979	3	2	3	
	Total Experie	ence		37	10	22	

# 8. DETAILS OF MEMBERSHIP IN BOARDS OF STUDIES, ACADEMIC COUNCIL, EXPERT COMMITTEES, ETC:

- Chairman of Board of Studies of Science and Humanities Anna University of Technology
- ◆ Chairman of of Board of Studies PSGCT, Coimbatore

- Member of Board of Research Anna University of Technology, Coimbatore
- Member of Board of Studies Bharathiar University, Coimbatore
- Member of Doctoral Committee Anna University of Technology
- Member of Staff Selection Committee CIT, Coimbatore
- ◆ Member of Research Advisory Committee PSGCT, Coimbatore
- ◆ Member of Academic Council PSGCT, Coimbatore
- Member of Board of Studies, Sri Visalakshi Arts College for Women, Udumalpet
- Member of Board of Studies, Sri Ramakrishna Vidhyalaya Arts College, Periyanaickenpalayam, Coimbatore

# **RESEARCH GUIDANCE:**

M.Phil/Ph.D. Projects Guided	:13
M.Phil/Ph.D. Projects Guiding	: 5
M.Sc. Projects Guided	: 65

# **DETAILS OF PROJECTS COMPLETED / ONGOING:**

SNo	Project	Sponsoring Organisation	Period	Grant (Rs in Lakhs)	Principal / Co- Investigator
1.	Growth and characterisation of rare earth borate-based single crystals for UV laser generation	SERB- DST	2012-2015	49.33	Co- Investigator
2.	Development of healthcare textiles for medical applications using plasma technique	AICTE-RPS Scheme	2009-2012	3.0	Investigator
3.	Development of Hygienic Fabrics Using Natural Antimicrobial Finish for Defence Application	DRDO Under 'Defence Grant-In- Aid Scheme'	2009-2011	9.0	Co- Investigator

4.	Development of Hygienic Fabrics Using Nanoencapsulated Natural Antimicrobial Finish for Defence Application	DRDO LSRB	2009-2011	13.47-	Investigator
5.	Development of flexible PZT-polymer composites for pressure sensor Applications	UGC	2010-2012	9.3	Investigator
6.	Development of doped Ceria based composite Electrolyte for High Efficiency solid oxide fuel cell	UGC	2010-2011	8.8	Co- Investigator
7.	Development of healthcare textiles for medical applications using plasma technique	AICTE	2009-2012	3.0	Co- investigator
8.	Development of Hygienic Fabrics Using Natural Antimicrobial Finish for Defence Application	DRDO	2009-2012	9.0	Co- investigator
9.	Development of Hygienic Fabrics Using Nanoencapsulated Natural Antimicrobial Finish for Defence Application	DRDO	2009-2012	13.0	Co- investigator
10.	Investigation on Nano Grain Al2O3 thin film capacitor for micro electronic applications	UGC	2009- 2010	1.8	Co- Investigator
11.	Growth and Characterization of meta Nitro aniline single crystals for Nonlinear optical applications	UGC	2010-2011	1.65	Investigator
12.	Development of Thin Film Actutors for Microfluidic Applications	AICTE	2007-2009	6.0	Investigator
13.	Synthesization and characterisation of Lead Ziroconate Titanate (PZT) – polymer composites for high range pressure sensor & accelerometer application	ISRO	2007-2009	3.79	Investigator
14.	Hot wall epitaxy system CuInSe <sub>2</sub> Thin films – Solar cell application	UGC	2007-2009	1	Investigator
15.	Development of Smart Micro Actuators for Micro Fluidic Applications	DST	2002 – 2005	18.3	Investigator
16.	Investigations on TiNi Thin Films for Micro Electro Mechanical Systems	UGC	2001 - 2004	1.36	Investigator
17.	High Density Optical Memory Devices	DST	2000 – 2003	13.0	Investigator
18.	Thin Film Optical Recording Materials	AICTE	2000 – 2003	11.0	Investigator
19.	High Efficiency Thin Film Solar Cell Materials	UGC	1998 - 2001	4.68	Co- Investigator
20.	To Develop and study coir reinforced polymer composite materials	TNSCST	1997	-	Guide

# . BOOKS / MONOGRAPHS / LABORATORY MANUALS:

S.No	Title	Publisher	Year
1	Materials Science	R. K. Publishers	2005
		Coimbatore	
2	Practical Physics for Engineers	R K Publishers,	2006
		Coimbatore	
3	Physics for Engineers	R K Publishers,	2006
		Coimbatore	
4	Physics for Engineers 2 <sup>nd</sup> Ed.	R K Publishers	2007
5	Engineering Physics 2 <sup>nd</sup> Ed.	R K Publishers	2010
6	Materials Science 2 <sup>nd</sup> Ed.	R K Publishers	2010
	LABORATORY MANU	ALS PREPARED	
1	Experiments in Applied Physics	-	2000
2	Materials Science - A Laboratory	-	1999
	Course		

# Profile of Dr. S.Arumugam

(i) Designation	:	Professor of Physics
(ii) Qualification	:	M.Sc., M.Ed., M.Phil., Ph.D.,
(iii) Experience	:	UG: 32 years, PG: 28 years
(iv) Specialization	:	Solar Thermal Conversion
(v) Email id	:	sarumugam_gri@yahoo.co.in



# (vi) Research Guidance:

Degree	Awarded	Guiding
M.Phil	14	4
Ph.D	7	6

# (vii) Publications

SI. No.	Category	Total	For the period 2010-2016
1	No. of papers in Edited Volume /	20	10
	Proceedings		
2	No. of Publications in International and	28	15
	National Journal		

## Select Publications

SI. No	Title of the Article	Name of the Journal	I/N	ISBN/ ISSN	Vol.	Pages	Date, Month and Year
1	Performance study of a Laboratory Model Shallow Solar Pond with and without single transparent glass cover for solar thermal energy conversion applications	Journal of ecotoxicolog y and environment al safety	I	0147- 6513		10.101 6/ j.ecoen v.2016 .03.02 0	Feb. 2016
2	Dependence of structural, electrical, optical and sol-gel spin coated Cdo thin films on the process temperature	Journal of Nano- electron. Phys.	Ι	2077- 6772	3	499- 506	Feb. 2011

3	Structural surface morphological and electrical properties of spray pyrolysis made Cu/Cu2O composite films for different Molar Concentration of Cu(OAc) <sub>2</sub>	Research Journal of material Sciences	Ι	2320- 6055	1	15-19	March 2013
4	A study of phase change material (PCM) for insitu solar thermal energy collection and storage	International Journal of Innovative Research in Science, Engineering and Technology	I	2347- 6710	4	350- 354	Feb. 2015
5	Thermal Performance Study on Parametric Variation of Storage Volume of Water Loaded in a Small and a Domestic Size Experimental Shallow Solar Ponds (SSP)	International Journal of Innovative Research in Science, Engineering and Technology	I	2347- 6710	4	370- 376	Feb. 2015

(viii) Seminars/Conferences/Workshops organized (2010-16)	:	2
(ix) Seminars/Conferences/Workshops attended (2010-16)	:	6

(x) Awards and Honours : Best Poster Award

(xi) Invited talks in National / International Conference (2010-16) : 6

(xii) Additional responsibilities (2010-16):

- Coordinator: B.Ed/M.Ed Programme, GRI
- Coordinator: Popular Lecture Series, GRI

# Photos of National Level Seminar on Advanced Materials and application





Photos of Two-day National Seminar on Advanced Materials and Applications-2019

#### **Report**

Advanced Materials are at the heart of many technological developments that touch our lives. Electronic materials for communication and information technology, biomaterials for better health care, sensors for intelligent environment, energy materials for renewable energy and environment, light alloys for better transportation, materials for strategic applications and more. The two-day national seminar was started with lightning the lamp by chief guest and conveners. The Registrar delivered the presidential address. More than 170 students have participated in the program. In the first day of seminar, the first talk was given by Dr.R.T. Rajendra Kumar, Associate Professor, Department of Nanoscience and Technology, Bharathiar University, Coimbatore. He had delivered the lecture on the topic Recent trends in nanotechnology. He explained the basic of nanomaterials and their preparation methods and applications in day today life. Followed by him the MSc and BSc students presented their poster to the audience and resource persons. After lunch, Dr.S.Jayakumar, Professor & Head, PSG Institute of Technology & Applied Research, Coimbatore, had given a lecture on advanced materials and research in thin films. The topic covered the basics of advanced materials. The talk was useful for the students and scholars. They gained a knowledge on various advanced materials and their applications The next day talk was started with Dr.S.Arumugam, Professor, Department of Physics, The Gandhigram Rural Institute, Gandhigram. He had delivered the lecture on Solar pond and distillation unit. The lecture was useful and he explained the production of solar power through the solar pond. Followed by the lecture Dr.K. Prem Nazeer, Principal, Dr. SNS Rajalakshmi College of Arts and Science, Coimbatore had given a topic on Applications of thin film. In the evening the PhD scholars from various colleges presented their work through poster and orally. The two-day seminar was gone smoothly and all the talkies were useful for students and faculties. Most of the students have clarified their doubts on their field. The resource person presented a cash prize and certificates for those presented their work by poster and oral nicely. The seminar was ended with the National Anthem.

# **<u>Certificate</u>**

