


MAR IVANIOS COLLEGE (AUTONOMOUS)

FACULTY PROFILE

NAME	Dr. Rajesh S		
DEPARTMENT	Department of Physics		
DESIGNATION	Assistant Professor		
ADDRESS	Devika Bhavan, TC50/308, KSRA K21, Kalady, Karamana PO Thiruvananthapuram, Kerala-695002		
TELEPHONE NUMBER(S)	9495225525		
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ACADEMIC QUALIFICATIONS (with name of degree awarding University)	<ul style="list-style-type: none"> • Ph.D (Physics), (C-MET, Thrissur), M.G. University Kottayam • M.Phil(Physics), University of Kerala • M.Sc.(Physics), University of Kerala 		
TEACHING/RESEARCH EXPERIENCE	LEVEL	YEARS OF SERVICE	INSTITUTION
	Assistant Professor	19.12.2019 onwards	Department of Physics, Mar Ivanios College (Autonomus), TVPM-15
	Assistant Professor	01.08.2016-18.12.2019	Department of Physics, Christ Nagar College, Maranalloor, TVPM
	Post Doctoral Researcher	01.04.2011-31.03.2015	Department of Materials and Ceramic Engineering /CICECO, University of Aveiro, Portugal
	Post Doctoral Researcher	01.02.2010-31.12.2010	Microelectronics and Materials Physics Laboratories, University of Oulu, Oulu, Finland
	Scientist-SC	13.05.2019-13.01.2010	International Thermonuclear Experimental Reactor(ITER-INDIA), Institute for Plasma Research(IPR), Ahmedabad, India
SPECIALIZATION	Materials Science		
PUBLICATIONS/ PARTICIPATION IN SEMINARS/ CONFERENCES ETC (Please attach a separate detailed list with titles of papers, names of conferences, etc)		INTERNATIONAL	NATIONAL
	NO. OF RESEARCH PAPERS IN JOURNALS	37	
	NO. OF PUBLICATIONS IN CONFERENCE PROCEEDINGS	5	
	NO. OF CONFERENCES PARTICIPATED IN	5	
PROJECTS			
DETAILS OF RESEARCH SUPERVISION	NO OF STUDENTS AWARDED PHD: NO. OF STUDENTS WITH SUBMITTED DISSERTATIONS: NO. OF CURRENT STUDENTS:		

HONOURS AND AWARDS	FCT Bolsas Post Doctoral Fellowship 2012, KSCSTE-Young Scientist Fellowship 2014
POSTS HELD	
ANY OTHER INFORMATION	1 US Patent, 1 Indian Patent, 1 Technology Transferred
PHOTO (Please copy and paste the photograph you would like to have as your profile image)	

Teaching Experience

Assistant Professor: December 2019-till date
Department of Physics
 Mar Ivanios College (Autonomus), Thiruvananthapuram-15, India

Assistant Professor: August 2016-December 2019
Department of Physics
 Christ Nagar College, Maranalloor, Thiruvananthapuram, India

Assistant Professor: July 2015- March 2016
(CONTRACT)
Department of Physics
 Govt. College, Nedumangadu, Thiruvananthapuram, India

Research Experience

Post Doctoral Fellow : April 2011-March 2015
(FCT fellow) **Department of Materials and Ceramic Engineering/CICECO**
 University of Aveiro, Aveiro, PORTUGAL

- Focusing in the development of novel electrolyte and electrodes for Intermediate Temperature Fuel Cells
- Carrying out research in the mechanism of ion transport in Solid Oxide Fuel Cell and Molten Carbonate Fuel cells
- Electrical characterization of fuel cell materials through Impedance Spectroscopy and Faradaic efficiency measurements

Post Doctoral Fellow: February 2010- December 2010
Microelectronics and Materials Physics Laboratories
 Department of Electrical and Information Engineering,
 University of Oulu, Oulu, FINLAND

- Carried out research in the field of high permittivity low loss materials for Printed Electronics devices

- Development of new materials for Ultra Low Temperature Cofired Ceramics (ULTCC) application and tape casting of the same.
- Involved in the electrical characterization of materials at high as well as low frequency regions

Project Scientist: May 2009 – Jan 2010
ITER-INDIA, Institute for Plasma Research (IPR), Gandhinagar, INDIA

- Worked as a Material Scientist in the Diagnostic Neutral Beam (DNB) division of ITER project.
- ITER is an international project by seven countries (EU, US, Russia, Japan, South Korea, China and India) for realising an Experimental Thermonuclear Reactor at Cadarache, France
- During my research stay at ITER, got experienced with the planning and implementation of a multidisciplinary project
- My main contribution was in the design and fabrication of Ceramic and Polymer/Ceramic composites for high voltage and high field applications
- I was also involved in the risk analysis and management of ITER-DNB system

Senior Research Fellow: Nov 2004- Apr 2009
Centre for Materials for Electronics Technology (C-MET) Ministry of Information and Communication Technology, Government of India, Thrissur, Kerala INDIA

- Carried out research on “ PTFE based Temperature Compensated, Low Loss and High Permittivity Microwave Substrates” under the guidance of Dr. R. Ratheesh Scientist, C-MET, Thrissur, India.
- Hands on experience in ceramic processing through different methods like solid state reaction route, sol gel route and chemical precipitation route etc.
- Expertised in the microwave characterization of materials by different techniques using Vector Network Analyzer.
- Well-versed in the analysis of the results from X-ray Diffractometer, Network Analyzer, Mercury Porosimeter, Micro hardness Tester, Gain Phase/Impedance Analyzer, BET, SEM, Optical Microscope, Ultrasonic velocity measurements, TGA/DSC and Piezoelectric evaluation.
- Acquired good knowledge in C language and advanced scientific packages. Sound working knowledge in Windows and DOS platforms.

Award and Honors : FCT Bolsas Post Doctoral Fellowship 2012,
 KSCSTE- Young Scientist Fellowship 2014

Educational Qualifications

3

Ph. D. (Physics)	2009, Centre for Materials for Electronics Technology (C-MET), Thrissur, India (M.G.University, Kottayam, India)
M. Phil (Physics):	A-Grade 2003-2004 University of Kerala
M. Sc. (Physics):	FIRST CLASS 2000-2002 University of Kerala
B.Sc. (Physics):	FIRST CLASS 1997-2000 University of Kerala
Pre-Degree (+2):	FIRST CLASS 1995-1997 University of Kerala
High School (S.S.L.C):	FIRST CLASS 1995 State Education Board

Date of Birth: 19.April.1980
Gender: Male
Fathers Name: Surendran Nair
Nationality: Indian

PERMANENT ADDRESS:

Dr. Rajesh S
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Kalady, Karamana PO
Thiruvananthapuram-695002
Kerala, India

Patents

1. Ceramic Filled Fluoropolymer Compositions, Methods and Applications thereof
S.Rajesh, K.P. Murali, R.Ratheesh, **US Patent 2014 (US20140162065 A1)**
2. Ceramic Filled Fluoropolymer Compositions, Methods and Applications thereof
S.Rajesh, K.P. Murali, R.Ratheesh, **Indian Patent 2012 (3815/DEL/2012)**

Book Chapter

1. Composite Electrolytes and electrodes for Intermediate Temperature Hybrid Fuel Cells **S. Rajesh**, D. A. Macedo, R. M. Nascimento, Materials and Process for Energy, Edited by A. Mendez-Vilas, Formatex Research Center, Madrid

Journal Publications:

- 1) Effects of gadolinia doping on densification and electrical properties of $\text{Ce}_{0.99-x}\text{Gd}_x\text{Cu}_{0.01}\text{O}_{2-\delta}$ solid solutions
THS Silva, CGM Lima, RPS Dutra, F de M Aquino, JPF Grilo, **S Rajesh**, DA Macedo, *Ceramica* **63** (2017) 470-477
- 2) Effect of composition on the structural development and electrical conductivity of NiO-GDC composites obtained by one-step synthesis
João P.F. Grilo, Caroline G. Moura, Daniel A. Macedo, **Surendran Rajesh**, Filipe M.L. Figueiredo, Fernando M.B. Marques, Rubens M. Nascimento, *Ceramics International*, **43(12)** 8905-8911
- 3) One-step synthesis and microstructure of CuO-SDC composites
H.C.T. Firmino, A.J.M. Araújo, R.P.S. Dutra, R.M. Nascimento, **S. Rajesh**, D. A. Macedo, *Ceramica* **63** (2017) 52-57
- 4) TL characterization of Ag co-doped $\text{SrSO}_4:\text{Eu}$ phosphors for gamma dosimetry application
S. Jayasudha, K. Madhukumar, C.M.K. Nair, Resmi G. Nair, **S. Rajesh**, T.S. Elias, V.M. Anandakumar, N. Gopakumar, *J Luminescence* **184** (2017) 136-142
- 5) TL dosimetric characterization of gamma irradiated $\text{SrSO}_4:\text{Eu}$ phosphors
S. Jayasudha, K. Madhukumar, C.M.K. Nair, Resmi G. Nair, **S. Rajesh**, T.S. Elias, V.M. Anandakumar, N. Gopakumar, *J Luminescence* **183** (2017) 259-265
- 6) Synthesis of $\text{Ce}_{0.8}\text{Sm}_{0.2}\text{O}_{1.9}$ solid electrolyte by a proteic sol-gel green method,
Daniel A. Macedo, Ricardo P. S. Dutra, Rubens M. Nascimento, José M. Sasaki, Moisés R. Cesário, **Surendran Rajesh**, Filipe L. Figueiredo, Fernando M. B. Marques, *Cryst. Res. Technol.* (2016) **51(6)** 400-404
- 7) Synthesis and Electrochemical Assessment of $\text{Ce}_{0.5}\text{Yb}_{0.5}\text{O}_{1.75}$ Ceramics and Derived Composite Electrolytes
Natércia C. T. Martins, **Surendran Rajesh**, Fernando M. B. Marques, *Mater Res Bull* (2015) **70** 449-455
- 8) Control and Enhancement of the Oxygen Storage Capacity of Ceria Films by Variation of the Deposition Gas Atmosphere During Pulsed D.C. Magnetron Sputtering
Asmaa Eltayeb, K. V. Rajani, Anthony McCoy, Anita Venkatanarayanan, Aleksey Yaremchenko, **Rajesh Surendran**, Stephen Daniels, Enda McGlynn, *Journal of Power Sources* (2015) **279** 94-99
- 9) Synthesis and properties of CuO-doped $\text{Ce}_{0.9}\text{Gd}_{0.1}\text{O}_{2-\delta}$ electrolytes for SOFCs,
Chyristian G. M. Lima, Thamyscira H. Santos, Ricardo P. S. Dutra, Rubens M. Nascimento, **Surendran Rajesh**, Fábio C. Fonseca, Daniel A. Macedo, *Ceramics International* (2015) **41** 4161-4168

- 10) Stability of Metal Oxides Against Li/Na Carbonates in Composite Electrolytes
Francisco J. A. Loureiro, **Surendran Rajesh**, Filipe M. L. Figueiredo, Fernando M. B. Marques, *RSC Advances* (2014) 4 59943-59952
- 11) Electrical Properties of Lanthanum Silicate Apatite Electrolytes Prepared by an Innovative Chemical Route
G. L. S. Macedo, D. A. Macedo, **S. Rajesh**, A. E. Martinelli, F. M. L. Figueiredo, F. M. B. Marques, R. M. Nascimento, *ECS Transactions*, (2014) 61 (36) 23-31
- 12) Performance of LaCoO₃ and La_{0.8}Sr_{0.2}Co_{0.2}Fe_{0.8}O_{3-δ} Based Composite Cathodes under Carbon Dioxide
S Rajesh, J.R.S. Pereira, F.M.L. Figueiredo, FMB Marques, *Electrochimica Acta* (2014), 125, 435-442
- 13) Bi-layer glass-ceramic sealant for solid oxide fuel cells
Reddy A.A., Eghtesadi N., Tulyaganov D.U., Pascual, M. J., Santos L.F., **Rajesh S.**, Marques, F.M.B., Ferreira, J.M.F. *J Eur Ceram Soc.* (2014) 34 (5), 1449-1455
- 14) Composite Electrodes for Ceria-Carbonate Intermediate Temperature Electrolytes
J.R.S. Pereira, **S Rajesh**, F.M.L. Figueiredo, FMB Marques, *Electrochimica Acta* (2013), 90, 71-79
- 15) One-step Synthesis of Composite Electrolytes of Eu-doped Ceria and Alkali Metal Carbonates.
S. Rajesh, D. A. Macedo, R. M. Nascimento, G. L. Souza, F.M.L. Figueiredo, F.M.B. Marques, *Int J Hydrogen Energy* (2013) (2013), 38, 16539-16545
- 16) High permittivity polymer composites with ceramic coated silver flakes
S. Rajesh, K. Sonoda, A. Uusimaki, K.H. Yang, H.Y. Lu, H. Jantunen, *J Mater Sci: Mater Electron* (2013) 24, 191-195
- 17) Low temperature sintering and dielectric properties of Alumina filled Glass composites for LTCC applications
S. Rajesh, M. Letz, S. Pichle-Wilhelm, H. Jantunen, *Int. Journal of Applied Ceramic Technology* (2012) 9(1), 52-59
- 18) Temperature stable low loss PTFE/rutile composites using secondary polymer
S. Rajesh, K.P.Murali, R. Ratheesh, *Applied Physics A*, (2011),104, 159-164
- 19) Effect of filler on the temperature coefficient of relative permittivity of PTFE/ Ceramic composites,
S. Rajesh, K.P.Murali, H. Jantunen, R. Ratheesh, *Physica B: Condensed Matter*, (2011), 406 (22), 4312-4316
- 20) Design optimization of the 100 kV HV bushing for ITER –DNB,
Sejal Shah, **S. Rajesh**, B. Srusti, M. Bandyopadhyay, C. Rotti, M. J. Singh, G. Roopesh, A. K. Chakraborty, B. Schunke, R. Hemsworth, J. Chareyre, *Fusion Engineering and Design*, (2011) 86, 892-895
- 21) Design and over view of 100 kV bushing for the DNB injector of ITER,
Sejal Shah, **S. Rajesh**, S. Nishad, B. Srusti, M. Bandyopadhyay, C. Rotti, M. J. Singh, G. Roopesh, A. K. Chakraborty, B. Schunke, R. Hemsworth, J. Chareyre, L. Svensson, *AIP Conf. Proc.* (2011), 139, 555-566

- 22) BST-COC composite based rectangular dielectric resonator antenna (DRA) for 2.4 WLAN wrist applications,
V.K. Plaukuru, K. Sonoda, **R. Surendran**, H. Jantunen, *Progress In Electromagnetic Research C*, (2010) 16, 195-205
- 23) Preparation and characterization of cordierite filled PTFE laminates for microwave substrate applications
K.P. Murali, **S. Rajesh**, K Stanly Jacob, Om Prakash, A. R. Kulkarni, R. Ratheesh, *Journal of Mater Sci: Mater Electron* (2010) 21(2), 192-198
- 24) Effect of particle size on the microwave dielectric properties of alumina filled PTFE substrates
K.P. Murali, **S. Rajesh**, Om Prakash, A. R. Kulkarni, R. Ratheesh, *Int. Journal of Applied Ceramic Technology* (2010) 7(4), 475-481
- 25) Preparation and Microwave Characterization of BaWO₄ Filled Polytetrafluoroethylene Laminates for Microwave Substrate Applications,
Nijesh K James, **Rajesh S**, Murali K.P., Stanly Jacob K, Ravendran Ratheesh, *J Mater Sci: Mater Electron* (2010) 21(12) 1255-1261
- 26) Effect of Silane Coatings in aqueous and non aqueous media on the properties of Magnesia filled PTFE laminates
K.P. Murali, **S. Rajesh**, Om Prakash, A. R. Kulkarni, R. Ratheesh, *Materials Chemistry and Physics* (2010) 122, 317-320
- 27) Preparation and microwave characterization of PTFE/PEEK Blends
Rajani K.V., **Rajesh S**, Murali K.P, Mohanan P, Ratheesh R, *Polymer Composites* (2009) 30(3), 296-300
- 28) Preparation and Characterization of high permittivity and low loss PTFE/CaTiO₃ Microwave Laminates.
S. Rajesh, K.P.Murali, R. Ratheesh, *Polymer Composites* (2009) 30(10), 1480-1485
- 29) Preparation and Characterization of High Permittivity SrTiO₃ filled PTFE Composites for Microwave Substrate Applications
S. Rajesh, K.P.Murali, K.V.Rajani, R. Ratheesh *Int. Journal of Applied Ceramic Technology* (2009) 6(5), 553-561
- 30) Comparison of Alumina and Magnesia filled PTFE composites for microwave substrate Applications.
K.P. Murali, **S. Rajesh**, Om Prakash, A. R. Kulkarni, R. Ratheesh *Materials Chemistry and Physics* (2009) 113(1), 290-295
- 31) Preparation and Properties of Silica filled PTFE flexible laminates for microwave circuit applications
K.P. Murali, **S. Rajesh**, Om Prakash, A. R. Kulkarni, R. Ratheesh *Composites:A* (2009) 40(8), 1179-1185
- 32) Rutile filled PTFE composites for flexible microwave substrate applications
S. Rajesh, K.P.Murali, V. Priyadersini, S. N. Potty, R. Ratheesh, *Materials Science and Engineering B*, (2009) 163(1), 1-7
- 33) Microwave dielectric properties of PTFE/rutile nano composites.
S. Rajesh, V.S. Nisa, K.P.Murali, R. Ratheesh, *Journal of Alloys and Compounds*, (2009) 477(1-2), 677-682

- 34) Preparation, Structural and Microwave dielectric Characterization of $Ba_{3-x}Sr_xYNb_3O_{12}$ ($x=0, 1, 2, 3$) Ceramics.
S.P. Sithara, **S. Rajesh**, K.V.Rajani, K.P. Murali, R.Ratheesh, *Scripta Materialia*, (2008) 59 (4), 424-27
- 35) Preparation, Characterization and Dielectric properties of temperature stable $SrTiO_3$ /PEEK composites for microwave substrate applications.
V.S. Nisa, **S. Rajesh**, K.P.Murali, V. Priyadersini, S. N. Potty, R. Ratheesh. *Composites Science and Technology* (2008) 68(1) 106-112
- 36) Microwave dielectric properties of rutile filled PEEK composites.
S. Rajesh, K.P.Murali, V. Priyadersini, S. N. Potty, R.Ratheesh, P. Mohanan *Polymer-Plastic Technology and Engineering* (2008) 47, 242-46
- 37) Preparation, characterization and dielectric properties of $Ba_{3-x}Sr_xTi_4M_4O_{21}$ [$M= Nb/Ta; 0 \leq x \leq 3$] Ceramics.
S. Rajesh, S. Nivas Babu, S. N. Potty, R. Ratheesh. *Mater.Lett.* (2006) 60 2179-2183

Invited Talks:

1. Composite Electrode materials for Intermediate Temperature Applications, *International Conference on Advanced Functional Materials (ICAFM 2014)*, Trivandrum, India
2. An Introduction to Advanced Materials Science, *National Science Day Lecture 2017*, N.S.S. College, Nilamel, India
3. Fuel Cells, *National Seminar 2018* at VTM NSS College, Dhanuvachapuram, Trivandrum
4. Introduction to Solid Oxide Fuel Cells, *National Science Day Lecture 2018*, Dr. Palpu College of Arts and Science, Pangode, India

Conferences:

1. Temperature Stable Microwave Substrate Based on PEEK/TiO₂ Composite System **S. Rajesh**, K.P.Murali, V. Priyadersini, S. N. Potty, P.Mohanan and R. Ratheesh.
MMA- 2006, Finland
2. Effect of Temperature Coefficient of Dielectric Constant of the Filler on the Temperature Stability of PTFE composites
Surendran Rajesh, Kodakkattu P Murali, Heli Jantunen and Ravendran Ratheesh, *MMA 2010, Warsaw, Poland*
3. Electrode materials for ceria-carbonate composites for application in carbon dioxide separation membranes.
J. R.S. Pereira, **S. Rajesh**, F. M. L. Figueiredo, F. M. B. Marques, *E-MRS 2012, Strasbourg, France*
4. Assessment of electrodes for composite ceria-based carbon dioxide separation membranes
J. R.S. Pereira, **S. Rajesh**, F. M. L. Figueiredo, F. M. B. Marques, *Electroceramics XIII 2012, Twente, Netherlands*
5. Synthesis and characterization of $Ce_{0.5}Yb_{0.5}O_{1.75}$ for intermediate temperature applications
S. Rajesh, N. Martins, F.M.B. Marques, *ICE 2013, Joao Pessoa, Brasil*

Reference

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3. Professor. Fernando Marques
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Portugal
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