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Date of Birth: 19.April.1980
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Dr. S.RAJESH
Post Doctoral Researcher
Department of Materials and Ceramics Engineering/CICECO
University of Aveiro,
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Research Experience

Post Doctoral Fellow : April 2011-till date
(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.

Educational Qualifications

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

Patents

1. Ceramic Filled Fluoropolymer Compositions, Methods and Applications thereof
S.Rajesh, K.P. Murali, R.Ratheesh, **US Patent 2013 (filed)**
2. Ceramic Filled Fluoropolymer Compositions, Methods and Applications thereof
S.Rajesh, K.P. Murali, R.Ratheesh, **Indian Patent 2012** (Application Number: **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

Publications:

- 1) Performance of LaCoO_3 and $\text{La}_{0.8}\text{Sr}_{0.2}\text{Co}_{0.2}\text{Fe}_{0.8}\text{O}_{3-\delta}$ Based Composite Cathodes under Carbon Dioxide
S Rajesh, J.R.S. Pereira, F.M.L. Figueiredo, FMB Marques, **Electrochimica Acta (2014), 125, 435-442**

- 2) Bi-layer glass-ceramic sealant for solid oxide fuel cells
Reddy A.A., Egtesadi 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**
- 3) 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**
- 4) 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**
- 5) 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**
- 6) 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**
- 7) Temperature stable low loss PTFE/rutile composites using secondary polymer
S. Rajesh, K.P.Murali, R. Ratheesh, *Applied Physics A*, (2011),**104, 159-164**
- 8) 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**
- 9) 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**
- 10) Desing 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**
- 11) 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**

- 12) 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
J Mater Sci: Mater Electron (2010) 21(2), 192-198
- 13) 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***
- 14) 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***
- 15) 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***
- 16) 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***
- 17) 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***
- 18) 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***
- 19) 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***
- 20) 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***

- 21) 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
- 22) 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
- 23) 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
- 24) 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
- 25) 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
- 26) 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. *Mat.Lett.* (2006) **60** 2179-2183

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. Fabrication of $SrTiO_3$ filled PTFE Composites for Microwave Substrate Applications
S.Rajesh, K.P.Murali, V.Priyadarsini, S.N.Potty, R.Ratheesh, **ICMARS 2006 Jodhpur, India**
3. Effect of silane coating on the dielectric and mechanical properties of ceramic filled PTFE based substrates.
 K.P.Murali, **S.Rajesh**, V.Priyadarsini, S.N.Potty, R.Ratheesh and P.Mohanan,
APSYM 2006, CUSAT, Kochi.India
4. 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

5. 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**

6. 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**

Reference

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