

Nivas Babu Selvaraj

CONTACT

Post Doctoral Fellow
Department of Ceramics and Materials Engineering
Centre for Research in Ceramics and Composite Materials
University of Aveiro
3810-193 Aveiro, Portugal
Email-nivas@ua.pt
Mobile-00351 911 577 328

EDUCATION

- **Doctor of Philosophy, Physics** October 2011
AGH University of Science and Technology, Krakow, Poland
Thesis: Thermal analysis and neutron imaging studies of a metal hydride storage tank. Supervisor: Prof. Henryk Figiel
- **Master of Science, Physics** July 2004
Cochin University of Science and Technology, Cochin, Kerala, India. Thesis: Interaction of Intense radiation with matter. Supervisor: Prof. Ramesh Babu T
- **Bachelor of Science, Physics** June 2001
University of Calicut, Calicut, Kerala, India

HONOURS

FCT Bolsa Postdoctoral Fellowship 2012-	Govt. of Portugal
Winner of Materials Today cover competition	2009
Marie Curie Fellowship 2005-2008	European Union
Research Fellowship C-MET 2004-2005	BRNS, Govt. of India

EXPERIENCE

Research

FCT-Post Doctoral Fellow 2012-till date
Department of Materials and Ceramic Engineering, University of Aveiro, Portugal
Grain boundary complexions in functional electronic materials (SFRH/BPD/82158/2011).

Marie Curie Fellowship 2005-2008
Host 1: AGH University of Science and Technology, Poland
Host 2: Universite de Fanche Comte, France
The characterisation of Intermetallic Hydrides and Assessment of their Suitability for Storage Tanks (MRTN-CT-2004-512443).

Teaching

AGH university of Science and Technology, Krakow, Poland 2008-2011
Taught under graduate level course in general physics for the Department of Mechanical engineering and Robotics. Shared responsibility for tutorials, exams, homework assignments, and grades.

ADDITIONAL SKILLS

- Expertise in softwares such as COMSOL multiphysics, Digital Micrograph, STEM CELL, OCTOPUS, Image J, Origin etc..
- Languages- English (fluent), French (beginner), Polish (beginner), Portuguese (beginner) and fluent in 3 Indian languages namely Malayalam, Tamil and Hindi.

EXTERNALLY FUNDED PROJECTS

- UID/CTM/50011/2013, CICECO, University of Aveiro, Portugal 2015-2017
- COFUND 312483-ESTEEM2 (FP7), CMES-CNRS, France 2014
- MNiSzW, grant no. N N202 208038, AGH University, Poland 2010-2011
- CP-CSA_INFRA-2008-1.1.1Number226507-NMI3(FP7), HMIGermany2009

IMPORTANT PUBLICATIONS

1. **Nivas Babu Selvaraj**, Manuela Fernandes, Ian Reaney, Joo C.C. Abrantes, Thibaud Denneulin, Etienne Snoeck, Ana Maria Senos, Paula Maria Vilarinho " Linking sintering stresses to nano modification in microstructure of BaLa4Ti4O15 by transmission electron microscopy" article in preparation.
2. Manuela A.C. Fernandes Joo P. Bia **N.B Selvaraj** Joo C.C. Abrantes Ana M.R. Senos Paula M. Vilarinho, Statistical analysis of grain size distributions in pressure-assisted BaLa4Ti4O15 microstructures, Microscopy and Microanalysis / Volume 22 / Supplement S4 / March 2016, pp 36 - 37
3. **N.B Selvaraj**., Fernandes, M., Denneulin,T. , Snoeck, E., Senos, A.M.R and Vilarinho, P.M, HRTEM studies of stress assisted sintered BaLa4Ti4O15, Microscopy and Microanalysis, Volume 21, Supplement S5, August 2015, pp 47-48.
4. A.M.R.Senos, L. Amaral, **N.B Selvaraj**, M. Fernandes, C. Jamin, O. Guillon, P.M. Vilarinho Microstructure evaluation of Titanate based layered pervoskites: Constrained Vs Free sintering, Microscopy and Microanalysis, Volume 21, Supplement S6, August 2015, pp 92-93.
5. L.Gondek, **Nivas Babu Selvaraj**, J. Czub, H. Figiel, D. Chapelle, N. Kardjilov, A.Hilger, I. Manke, Imaging of an operating LaNi4.8Al0.2 based hydrogen storage container, International Journal of Hydrogen Energy, Volume 36, Issue 16, August 2011, Pages 9751-9757.
6. **Nivas Babu Selvaraj**, Neutron tomographic reconstructed image of MH tank, Materials Today, Volume 13, Issue 12, Page 1-2 (December 2010).
7. H.Figiel, L. Gondek, M. Ziarek, **N.B. Selvaraj**, N. Kardjilov "Zastosowanie radiografii oraz tomo-grafii neutronowej w badaniach dla potrzeb energetyki wodoro-wej (Application of neutron radiography and tomography for research in the field of hydrogen energy)" Polish Hydrogen and Fuel Cell Association's Bulletin 5 (2010) 35-40.

8. **Nivas Babu Selvaraj**, David Chapelle, Dominique Perreux, Henryk Figiel. Modelling the evolution of temperature inside LaNi_{4.78}Sn_{0.22} storage tank during refueling, *Materials Design*, Volume 30, Issue 4, April 2009, Pages 954-957.
9. D. Perreux, **N B Selvaraj**, D. Chappel, H. Figiel (Oral). Assesment of the Temperature during Hydrogen refueling of Hydride storage tanks . 17th world hydrogen energy conference 2008 Volume 2, 2008, Pages 653-657.
10. S. Rajesh, **S. Nivas Babu**, S.N. Potty and R. Ratheesh. *Materials Letters* Volume 60, Issues 17-18, August 2006, Pages 2179-2183.

PRESENTATIONS POSTERS

1. Manuela A. C. Fernandes, Joo P. Bia, **Nivas Babu Selvaraj**, Joo C. C. Abrantes, Ana M. R. Senos, Paula M. Vilarinho, Statistical analysis of grain size distributions in pressure-assisted BaLa₄Ti₄O₁₅ microstructures, "Microscopy at the Frontiers of Science 2015" held in Porto, Portugal, from 9 to 11th September 2015.
2. M. Fernandes, **N. B. Selvaraj**, Joo C.C. Abrantes², A.M.R. Senos¹, P. M. Vilarinho¹ Effect of applied pressure during sintering in the BaLa₄Ti₄O₁₅ microstructure, 14th Conference of the European Ceramic Society held in Toledo, Spain from 21-25th of June 2015
3. Manuela Fernandes, **Nivas Babu Selvaraj**, Joo C. C. Abrantes, Ana M. R. Senos, Paula M. Vilarinho, Role of pressure assisted sintering in BaLa₄Ti₄O₁₅ microstructure VII International Materials Symposium, held at University of Porto, Portugal, 21-23 June, 2015.
4. **Nivas Babu Selvaraj**, Manuela Fernandes, Joa C.C. Abrantes, Denneulin, T., Snoeck, E., Senos, A.M.R and Vilarinho, P.M, Grain Boundary Engineering of Functional Electronic Materials using Constraint Sintering, Marie Curie Alumni Association general assembly poster session 6-7 february 2015, Porto, Portugal.
5. Selvaraj, N. B., Fernandes, M., Denneulin, T. , Snoeck, E., Senos, A.M.R and Vilarinho, P.M, HRTEM studies of stress assisted sintered BaLa₄Ti₄O₁₅, International Conference on Microscopy and Microanalysis, XLVIII Congress of the Portuguese Microscopy Society. Porto 6-7 November 2014, Portugal.
6. Ana Senos, Manuela Fernandes, Lus Amaral, **Nivas Selvaraj** , Christine Jamin, Olivier Guillon, Paula M. Vilarinho, "Grain growth studies in BaLa₄Ti₄O₁₅" International Conference on Sintering 2014 24-28 August 2014. Dresden, Germany.
7. **Nivas Babu Selvaraj**, Ana Senos "Linking sintering stresses with microstructure modification in electroceramics" Researchers Day 3 June 2014, held at University of Aveiro, Portugal.
8. A.M.R.Senos, L. Amaral, **N.B Selvaraj**, M. Fernandes, C. Jamin, O. Guillon, P.M. Vilarinho Microstructure evaluation of Titanate based layered pervoskites: Constrained Vs Free sintering, "Microscopy in Research 2013" held at Egas Moniz - Cooperativa de Ensino Superior CRL, Lisbon, Portugal 9-10 December 2013.
9. A.M.R.Senos, L. Amaral, **N.B Selvaraj**, M. Fernandes, C. Jamin, O. Guillon, P.M. Vilarinho , Microstructure evaluation of the constrained sintering effects in BaLa₄Ti₄O₁₅ Microscopy at the frontiers of science 2013 held at Tarragona, Spain 17-20 September 2013.
10. **Nivas Babu Selvaraj**, Manuela Fernandes, Luis Amaral, Joo C.C. Abrantes, Ana M.R.Senos; Paula M. Vilarinho Analysis of the effect of applied pressure during sintering on the microstructure and electrical conductivity of BaLa₄Ti₄O₁₅ ceramics X CICECO Meeting 18-19 April 2013, held at University of Aveiro, Portugal.

11. **Nivas Babu Selvaraj**, Manuela Fernandes, Luis Amaral, Joo C.C. Abrantes, Ana M.R.Senos, Paula M. Vilarinho, Electrical response of grain boundaries of BaLa₄Ti₄O₁₅ ceramics: the effect of sintering pressure, *Materiais-2013*, March 25-27, 2013, held at Coimbra Portugal.
 12. **Nivas Babu Selvaraj**, L.Gondek, H. Figiel (Oral) International symposium on metal hydrogen systems MH2010, held at Moscow, Russia. Visualising hydrogen absorption/desorption in a MH storage tank using Neutrons 19-23/July/2010.
 13. D. Chappel, **N B Selvaraj**, D. Perreux, H Figiel (Oral). 5th International congress on materials and engineering, CISGM-5, , Guelma, Algeria. 2D-modelling of temperature evolution inside a LaNi_{4.78}Sn_{0.22} storage tank during refueling. 22-24 Nov/2008.
 14. **Nivas Babu Selvaraj**, D. Chappel, H. Figiel, D. Perreux (Poster) International Symposium on Materials issues in a Hydrogen Economy, 12-15 November, 2007, Richmond, Virginia, USA. Modelling of Evolution of Temperature inside LaNi_{4.78}Sn_{0.22} storage tank during absorption of Hydrogen.
 15. **Nivas Babu Selvaraj**, D. Chappel, H. Figiel, D. Perreux (Poster) First Polish Fuel cell Conference 5-7 sep 2007, held at Zakopane, Poland. Characterization and performance of LaNi_{4.78}Sn_{0.22} as a hydrogen storage material.
-

WORKSHOPS SEMINARS

1. Summer workshop "transmission electron microscopy of nano materials" july 9-13,2012 University of Cadiz, Spain.
2. ICTS international condensed matter program dec 9-22,2011 IISC, banglore, India.
3. 31st Berlin School of Neutron Scattering March 11-19, 2010 Hahn Meitner Institute, Berlin, Germany.
4. 4th European School in Material Science May 25-30, 2009 Jozef Stefan Institute, Lublijana, Slovenia
5. The Final Workshop was held at University College London, UK on 8th-9th September 2008.
6. International Symposium on Metal Hydrogen Systems (MH2008), Reykjavik, Iceland, June 24-28, 2008.
7. The 5th HyTRAIN Workshop was held at the Universite Franch-Comte, France, 11th-14th January 2008, hosted by the Laboratoire de Mcahique Applique Raymond Chalat (LMARC), Universite de Franche Comte.
8. 4th HyTRAIN Workshop The 4th HyTRAIN Workshop was held at the GKSS Research Facility, Germany, 11th-14th June 2007, hosted by the GKSS research centre.
9. 3rd HyTRAIN Workshop The 3rd HyTRAIN Workshop was held at the Institute for Energy, EC Joint Research Centre, Petten, The Netherlands, 22nd-26th January 2007, hosted by the EC DG- JRC Institute for Energy
10. 2nd HyTRAIN Workshop The 2nd HyTRAIN Workshop was held in Paris, France, 3rd-6th July 2006, hosted by the Centre National de la Recherche Scientifique.

11. Introductory Workshop The introductory workshop was held in Salford, UK, 9th-13th January 2006 hosted by the Institute for Materials Research, The University of Salford.
12. Winter school on Non linear Optics- Theory and applications December 1-13,2003. Bharathidasan University, Trichy, India.

**PUBLIC
ENGAGEMENTS**

1. Invited Lecture on Materials for future, at Nehru College of Engineering, Pam-pady, Sep/2015
2. Inaugural speech on Physics in daily life, GBHS School, Wadackanchery, Sep/2015
3. Talk with young talents an interactive session, GVHS School, Thiruvilwamala, Sep/2015
4. Inaugural talk on science in society, Science day celebration, GUP School, Kutham-pully, Sep/2015
5. Invited Talk on Hydrogen storage systems, C-MET, Thrissur, Nov/2011
6. Inaugural talk on Renewable Energy Storage, Physics Assosiation, SVNSS Col-lege, Wadakanchery, 4/Jan/2012
7. Public lecture on Materials for Hydrogen storage, Dijon, France, 13/Jan/2008

REFERANCE

<p>Prof. Ana Senos Department of Materials and Ceramics Engineering Aveiro Institute of Materials University of Aveiro, Aveiro Portugal e-mail: anamor@ua.pt</p>	<p>Prof. Paula Vilarinho Department of Materials and Ceramics Engineering Aveiro Institute of Materials University of Aveiro Aveiro, Portugal e-mail: paula.vilarinho@ua.pt</p>
<p>Prof. Henryk Figiel Department of Solid State Physics Faculty of Physics and Applied Computer Science AGH University of Science and Technology Krakow, Poland e-mail: figiel@agh.edu.pl phone: +48 12 6172193</p>	<p>Assoc. Prof. Lukasz Gondek Department of Solid State Physics Faculty of Physics and Applied Computer Science AGH University of Science and Technology Krakow, Poland e-mail: lgondek@agh.edu.pl phone: +48 (12)6172904</p>