

## PERSONAL INFORMATION    Andrea Calabriso

## PROFESSIONAL EXPERIENCE

- 05/15 – 04/16**    **Post Doctoral Position**  
 Sapienza - University of Rome  
 Mechanical and Aerospace Engineering Department - DIMA  
 ▪ Numerical and experimental research and industrial energy system development  
**01/15 – 12/16** Project ‘Energy Stealth’  
 Funder: *Ministero della difesa*  
 DIMA – STE (Servizi Tecnici per l’Elettronica)
- 03/15 – 04/15**    **Lecturer**  
 ▪ Master EFER (Energy Efficiency and renewable energy sources)
- 11/11 – 01/15**    **PhD Position**  
 Sapienza - University of Rome  
 Mechanical and Aerospace Engineering Department - DIMA  
**09/13 – 08/14** Project ‘Ecocel’  
 Funder: *Ministero dell’ambiente e della tutela del territorio e del mare*  
 Partner: CIRPS – FBK (Fondazione Bruno Kessler) – SGS Hydrogen  
**09/12 – 08/13** Project ‘Unipower’  
 Funder: *Ministero dell’ambiente e della tutela del territorio e del mare*  
 Partner: CIRPS – FBK (Fondazione Bruno Kessler) Trento – SGS Hydrogen  
**11/11 – 07/12** Project ‘FarSeas’
- 02/12 – 01/13**    **Researcher fellow**  
 Sapienza University of Rome – Mechanical and Aerospace Department  
 ▪ Numerical study and modelling of Proton Exchange Membrane Fuel Cell

## EDUCATION AND TRAINING

- 11/11 – 01/15**    **Doctorate in Theoretical and Applied Mechanics**  
 Sapienza University of Rome – Theoretical and Applied Mechanics  
 Thesis: “ **Experimental Investigation of the Two Phase Flow in a Direct Methanol Fuel Cell**”  
 Main subjects: *Experimental method for the characterization of the DMFC (Direct Methanol Fuel Cell). Design of a single DMFC and test bench set up. PIV (Particle Image Velocimetry) measurements on the anode channels of the cell. Evaluation of the unfavorable Re regimes for the DMFC performance.*
- 03/09 – 10/11**    **Energy Engineering Master Degree – Renewable Energy Sources**  
 Sapienza University of Rome – Nuclear Energy & Energy Conversion Department 110/110  
lode  
 Thesis: “ **Modeling and Analysis of a CHP (Combined Heat & Power) system based on SOFCs (Solid Oxide Fuel Cells) and powered by biogas**”  
 Main subjects: *Modeling, analysis and design of near-zero-emission energy systems based on renewables and energy saving. Analysis and balance of plant of thermal and electric energy plants. Analysis and design of combustion chambers and heat exchangers in energy power plants. Study of the generation and distribution system of electric power.*

## SCIENTIFIC and DIDACTIC EXPERIENCE

- Scientific production** A. Calabriso, D. Borello, G.P. Romano, L. Cedola, L. Del Zotto, e S. G. Santori, Bubbly flow mapping in the anode channel of a direct methanol fuel cell via PIV investigation, *Applied Energy*, 10.1016/j.apenergy.2016.01.042
- A. Calabriso, S. G. Santori, L. Del Zotto, F. Rispoli e L. Cedola, Performance investigation of passive direct methanol fuel cell in different structural configuration, *Journal of Cleaner Energy Production*, Vol 88: 23-28, 2015. (DOI 10.1016/j.jclepro.2014.06.087)
- A. Calabriso, D. Borello, L. Cedola, L. Del Zotto, e S. G. Santori Development of improved passive configurations of DMFC with reduced contact resistance, *Energy Procedia*, Volume 61, 2014, Pages 2654-2657
- A. Calabriso, D. Borello, L. Cedola, L. Del Zotto, e S. G. Santori, Assessment of CO<sub>2</sub> Bubble Generation Influence on Direct Methanol Fuel Cell Performance, *Energy Procedia*, Volume 75, 2015, Pages 1996-2002
- Speaker at conferences** A. Calabriso, D. Borello, G. P. Romano,  $\mu$ -PIV investigation of the two-phase flow in the anode channels of a Direct Methanol Fuel Cell, *ASME-ATI-UIT 2015 Conference, May 17-20, 2015, Napoli, Italy.*
- A. Calabriso, S. G. Santori, L. Del Zotto, D. Borello e L. Cedola, Assessment of a Direct Methanol Fuel Cell under different operating conditions, *Scientific Advances in Fuel Cells, FUCE 2014, April 2-4, 2014, Amsterdam, Netherlands.*
- A. Calabriso, D. Borello, F. Rispoli, Simulation of fluid dynamic and electric field in a direct methanol fuel cell, *5<sup>th</sup> International Conference on Applied Energy, ICAE 2013, July 1-4, 2013, Pretoria, South Africa, Paper ID: ICAE2013-058.*
- Reviewer** A.T.I. 2015 – 70° Congresso Nazionale  
I reviewed some papers published as special issue for the ‘Energy Procedia’ journal
- Teaching experience** Lecturer - Sapienza University of Rome  
Monographic reading “Energy from Hydrogen and Fuel Cells”  
course of ENERGY SYSTEMS II – Master Degree in Energy Engineering  
Principal Lecturer Prof. Franco Rispoli
- Lecturer - Sapienza University of Rome  
Monographic reading “Fuel Cell Modelling”  
course of MODELING AND SIMULATION OF HEAT TRANSFER IN FLUID MACHINERY –  
Master Degree in Energy and Mechanical Engineering  
Principal Lecturer Prof. Domenico Borello
- Assistant supervisor** Master Thesis – ‘New technique of measurements with micro-PIV’, Author L. Hassing - Home University TUD technical University of Delfth, External Supervisors G.P. Romano, D. Borello, 2016.
- Master Thesis – Realizzazione e caratterizzazione di un generatore elettrico stand-alone basato su celle a combustibile a metanolo diretto e accumulatori - ‘*Design & characterization of a stand-alone energy device based on Direct Methanol Fuel Cells and Batteries*’ - Author M. Scuccimarri, Supervisor Z. Del Prete, Assistant Supervisor S. Santori & A. Calabriso. Sapienza Università di Roma, 2015.

Master Thesis – Analisi Sperimentale e caratterizzazione di un generatore con celle a combustibile a metanolo diretto e ricircolo del comparto anodico – *‘Experimental analysis and characterization of a Direct Methanol Fuel Cells stack and study of water management in the anode circuit’*- Author S. Comune, Supervisor Z. Del Prete, Assistant Supervisor S. Santori & A. Calabriso. Sapienza Università di Roma, 2015.

Master Thesis - Anàlisis experimental del funcionamiento de una celda de combustible de metanol directo en diferentes condiciones operativas - *‘Experimental analysis of a Direct Methanol Fuel Cell under different operative conditions’* – Author A. Grande Ruiz, Home University Supervisor F. J. Pino Lucena, Host University Supervisor D. Borello, Assistant supervisor A. Calabriso. Home University: Escuela Técnica Superior de Ingeniería; Host University: Sapienza Università di Roma. 2014.

Bachelor thesis - Confronto tra configurazione passiva ed attiva di celle a combustibile alimentate a metanolo diretto - *‘Active and Passive Direct Methanol Fuel Cells Comparison’* –Alessandro Laviano, Supervisor Domenico Borello, Assistants Supervisor A. Calabriso. Sapienza Università di Roma, 2013.

Bachelor thesis - Studio dello stato dell’arte e analisi sperimentale di un prototipo di cella a combustibile passiva alimentata a metanolo diretto - *‘Analysis of the state of art and experimental study of a Passive Direct Methanol Fuel Cell’* – Alessia Falcone, Supervisor Vincenzo Naso, Assistants Supervisor L. Del Zotto, S. Santori & A. Calabriso. Sapienza Università di Roma, 2012.

Bachelor thesis - Analisi funzionale di celle a combustibile PEM a funzionamento reversibile - *‘Bibliographical analysis of Regenerative Proton Exchange Membrane Fuel Cell’* – Enrico Miletto, Supervisor D. Borello, Assistant Supervisor A. Calabriso. Sapienza Università di Roma, 2011.