

## **CURRICULUM VITAE Prof. ALDO DI CARLO**

### **RESEARCH AT THE UNIVERSITY OF ROME “TOR VERGATA”**

Aldo Di Carlo (PhD 1995) in '96 became research assistant at the Department of Electronic Engineering of the University of Rome "Tor Vergata" and, on 2001, Associated professor. Since December 2012 he is Full Professor of Opto and Nanoelectronics in the same department. In September 2019 he was appointed as Director of the Institute for Structure of Matter of the National Research council (CNR-ISM) His research focuses on the study and fabrication of electronic and optoelectronic devices, their analysis and their optimization. An important aspect of the research concerns the simulation of micro and nanoelectronic devices. In recent years his research was particularly focused on the development of organic solar cells, in particular Dye Solar Cells and Perovskite Solar Cells, and on scaling-up of these technologies for industrial applications. Di Carlo founded and direct (2007-2019) the Center for Hybrid and Organic Solar Cells (CHOSE) which involve more than 30 researchers. Prof. Di Carlo is author/co-author of more than 500 scientific publications in international peer reviewed journals, several reviews on electronic and optoelectronic devices, 15 patents, several book chapters and co-author of two books (in Italian language) and has been invited to more than 80 invited talk at international conferences. Prof. Di Carlo has a h-factor = 59 and more than 13000 citations (web of Science). The results of his research have been used to realize 5 spin-off/start-up companies dealing with ICT and Energy technologies and a Public-Private Partnership.

### **PROJECT COORDINATION AND MANAGMENT**

Aldo Di Carlo is the European coordinator of the H2020 project CITYSOLAR on the development of Tandem cells perovskite/organics for building integration. He was European Coordinator of the FP7 Project ULTRADSSC on time-resolved characterization of DSSC solar cells and of the EU FP7 project OPTHER on THz Amplifiers based on carbon nanotubes. He is/was node coordinator of 8 H2020 project (IMPRESSIVE on tandem cell perovskite/DSSC, MOSTOPHOS on simulation of organic LEDs, CHEOPS on perovskite solar cells, GRAPHENE FLAGSHIP CORE 2 and CORE 3 on perovskite/graphene solar cells, CHIPSCOPE on GaN Nanowire for superresolution microscopes, MAESTRO for perovskite optoelectronics and ESPRESSO for the fabrication of large area Perovskite solar modules.). He is coordinator of the Regione Lazio infrastructural project ISIS@MACH (around 4 Meuro investment in infrastructure). He was node coordinator of several national and european research projects, including five FP7 STREP projects, three European Marie Curie Project, and a European FP6 STREP Project. He was coordinating also several national and regional projects (PRIN, MADESS, PF etc.). He is/has been coordinator of several research projects devoted to technology transfer to Large and Small-Medium Enterprises. The total funds raised Prof. A. Di Carlo for research activities exceeds 20 Meuro.

### **TEACHING AND OTHER ACTIVITIES AT THE UNIVERSITY OF ROME “TOR VERGATA”**

#### **Management**

President of the Engineering Faculty Library (2005 - )

Coordinator of the PhD program in Electronic Engineering (2011 – 2019)

#### **Current and past teaching**

Lecturer, Optoelectronics, Master Level, 45 lectures/course (2 hours each)

Lecturer, Nanoelectronics, Master Level, 30 lectures (2 hours each)

Lecturer, Design of Micro and Nanoelectronic devices, Master Level, 60 lectures (2 hours each)

Lecturer, Optoelectronics 2, Master Level, 25 lectures (2 hours each)

Lecturer, Biological and molecular electronics, Master Level, 25 lectures (2 hours each)

Lecturer, Advanced Optoelectronics, Master Level, 25 lectures (2 hours each)

Lecturer, Master in Photovoltaics Engineering, 3 lectures (2 hours each)

### **TECNOLOGY TRANSFER AND INDUSTRY RELATED ACTIVITIES**

#### **Involvement in Spin-Off and other research companies**

- INFM Spin-Off , **I-CODE** “Internet Computing on Demand”, now I-Code S.R.L. ([www.i-code.it](http://www.i-code.it))
- FILAS, Busines Lab Spin-Off , **RAPTECH** “RFID systems”, now RAPTECH S.R.L. ([www.raptech.it](http://www.raptech.it))
- University of Rome “Tor Vergata” Spin-Off “**TiberLAB**”, ([www.tiberlab.com](http://www.tiberlab.com))
- University of Rome “Tor Vergata” Spin-Off “**Dyers**”, ([www.dyers.it](http://www.dyers.it))

- University of Rome "Tor Vergata" Spin-Off "**Intellienergia**" ([www.intellienergia.com/](http://www.intellienergia.com/))
- University of Rome "Tor Vergata" Start-up "Ingem"
- 2009-2015 CTO of the **Dyepower** research company. Dyepower is research company for industrialization of dye solar cell for building integration formed by two Large Enterprises (ERG Renew and Permasteelisa) and three universities.

## TRACK RECORDS

### Bibliometric parameters:

- h-factor = 59, Citations = 13654 (Web of Science);
- h-factor = 67, Citations = 19395 (Google Scholar)

## Granted International patents (last 5)

1. Ballarino Maurizio, Brunetti Francesca, Cagliani Michela, Cardone Giorgio, Di Carlo Aldo, Polino Giuseppina "Photovoltaic systems and spray coating processes for producing photovoltaic systems, TW201528527 (A), Publication Date 2015-07-16
2. Ulisse Giacomo, Brunetti Francesca, Di Carlo Aldo, Ricci Ferdinando, Gemma Filippo, Fiorello Anna Maria, Dispenza Massimiliano, Buttiglione Roberta "Electron-Emitting Cold Cathode Device" US9111711 (B2); US2015022076 (A1), Publication Date: 2015-01-22
3. Di Carlo Aldo, Mincuzzi Girolamo, Petrolati Eleonora, Reale Andrea, Brown Thomas Meredith "Process Of Manufacturing Of Dye-Sensitized Solar Cells (Dscs) With Laser Shaping Or Patterning Of The Nanocrystalline Semiconductor Active Layer", EP2823497 (A1) Publication Date: 2015-01-14
4. Di Carlo Aldo, Mincuzzi Girolamo, Brown Thomas Meredith, Reale Andrea "Sintering Process Of Metal Oxide Based Formulations" US2014295102 (A1) Publication Date: 2014-10-02
5. Brown Thomas Meredith, Mincuzzi Girolamo, Giordano Fabrizio, Reale Andrea, Di Carlo Aldo "Process of Manufacturing Of The Catalytic Layer Of The Counter-Electrodes Of Dye-Sensitized Solar Cells", US2014235011 (A1), Publication Date: 2014-08-21

## Invited presentations to peer-reviewed, internationally established conferences. Last 10

- 1) Aldo Di Carlo, Graphene-Perovskite photovoltaics, GRAPHENE2020, October 19-23, 2020 – Virtual conference
- 2) Aldo Di Carlo, Graphene Canada 2020, Graphene-Perovskite photovoltaics: from lab cells to panels November 16-17, 2020 – Virtual Confernece
- 3) Aldo DI Carlo, Antonio Agresti, Sara Pescetelli Halide Perovskite modules and panels 12th International Conference on Hybrid and Organic Photovoltaics, 5th-8th July 2020, London – Virtual conference
- 4) Aldo Di Carlo, Perovskite solar cells with 2D materials, International workshop on Technologies for the Future, 28th September 2020, Bolzano (Italy) Aldo Di Carlo, Antonio Agresti, Sara Pescetelli, Anna Pazniak, Work Function and Interface Engineering in Perovskite Solar Cells by Using MXenes, 5th International Conference on Advanced Electromaterials (ICAE 2019), 5th-8th November 2019 Jeju, Korea.
- 5) Di Carlo, Scaling Dye and Perovskite cells to large area modules, Moscow Autumn Perovskite Photovoltaics International Conference (MAPPIC-2019) 14-15 October 2019, mosca (Russia)
- 6) Di Carlo, Perovskite Solar Cells and Modules, 22nd Sede Boqer Symposium on Solar Electricity Production, Sede Boqer (Israele)
- 7) Aldo Di Carlo, Antonio Agresti, Sara Pescetelli, Paolo Mariani, Anna Pazniak, Dimitry Muratow, Danila Saranin, Perovskite solar cells with 2D materials, 41th PIERS - Photonics & Electromagnetics Research Symposium, 17 - 20 June 2019, Roma (Italy)
- 8) Di Carlo, The scaling of perovskite solar cells to module and panel size, Next-Gen: IV PV Materials, Groeningen (Olanda) 9-12 Giugno 2019
- 9) Di Carlo, Two-dimensional materials for efficient halide Perovskite solar cells, 4th graphIn International Conference (Graphene Industry – Challenges & Opportunities), 21-22 Febraury Madrid (Spain) 2019
- 10) Di Carlo, The role of graphene and other 2D materials in Perovskite photovoltaics The second EU-China joint workshop, Dresden (Germany) December 7-8, 2018

**Organisation of International conferences (last 3)**

1. Member of the Organizing Committee of GHAPHENE 2019 conference, Roma 24-28 June 2019 (Italy)
2. Co-Chairman of the conference HOPV-2019, Roma 12-15 May 2019 (<http://www.nanoge.org/HOPV19/home>)
3. General Chairman of the 15th International Conference on Nanotechnology (IEEE NANO2015), Rome, 27-30 July 2015

**International Prizes/Awards/Academy memberships**

1. ST microelectronic Award: GE Meeting Giardini di Naxos (ME), Italy 30-06/ 2 -07/ 2005
2. 2007 Nanophotonics Engineering Award: PLMCN 7, 12-17 April Avana, Cuba
3. Macro Polo Award of the Italian Science, Kyoto (Japan), 22 November 2011
4. MEGAGRANT Russian Federation, 1st January 2018
5. SETTE Green Awards, Corriere della Sera 2/12/2015
6. Member of the IEEE Electronic Device Society
7. Member of the Italian Association for Electronics (SIE)
8. Advisory committee member of the International Workshop on Computational Electronics (2000 -)
9. Steering committee member of the Numerical Simulation of Optoelectronic Devices Conference, NUSOD (2011- )
10. Program committee member of the Physics of Light-Mater coupling in Nanostructures (2001 -)
11. General Chairman of the 15th IEEE International Conference on Nanoelectronics (IEEE NANO 2015) 27th-30th July 2015, Rome (Italy)

**Memberships to Editorials Boards of International Journals**

1. Associate Editor of Journal of Computational Electronics (2007 -)
2. Associate Editor of Journal of Nanophotonics(2006 - 2009)
3. Member of the Editorial Board of Semiconductor Science and Technology (2004 - 2010)