

ADVANCED MATERIALS FOR PHOTOVOLTAIC APPLICATIONS

The unprecedented interest in renewable, clean, abundant and potentially low cost energy makes photovoltaics one of the most promising technology for this area. Recent drop in cost/efficiency ratio of electricity produced by the direct conversion of sunlight allows more people to have access to this environmentally friendly energy. Photovoltaics is an area that is frequently highlighted by EU commission and takes place in Horizon 2020 targets under “competitive low-carbon energy” calls.

Silicon has been dominated the photovoltaics industry over several decades thanks to its superior properties and well-developed microelectronics industry based on it. Recently, very high efficiencies have been reported from solar cells fabricated using c-Si as well as various materials such as CdTe, CIGS, perovskites, organics and III-V based multijunction. Development of earth-abundant, non-toxic and low-cost materials are important to reduce the cost/efficiency ratio further.

The focus of the proposed session is on areas of growth, modelling and characterization of solar materials and devices. Special emphasis will be given, but not limited, to the effect of the material properties on the device efficiency with particular interest on cells manufacturing, thin films, nanostructures, phenomena at interfaces, structural defects, bulk and surface properties, carriers transport properties, light trapping mechanisms, flexible substrates, etc. This session will provide a platform for discussion on the wide range of advanced materials used for photovoltaic applications. All colleagues interested in the recent progresses and future challenges are invited to participate and encouraged to submit their contributions.

Isodiana Crupi

University of Palermo – DEIM (Department of Energy, Information Engineering and Mathematical models) – Viale delle Scienze – Edificio 9 – 90128 Palermo

isodiana.crupi@unipa.it

Short Curriculum Vitae

Isodiana Crupi is Associate Professor at the Department of Energy, Information Engineering and Mathematical Models at the University of Palermo. She received the M.Sc. degree in Electronic Engineering from the University of Messina in 1999 and the Ph.D. degree in Materials Science from the University of Catania in 2003. From 2004 to 2015 she has been Research Scientist at the National Research Council (CNR-IMM) in Catania. Since 1998, she has been a frequent scientific visitor at IMEC, Leuven (Belgium) collaborating with the CMOS Reliability, FLASH Memory and Solar Cell groups. Her main research interests include the synthesis and characterization of innovative materials for photovoltaic applications, electrical characterization of advanced semiconductor devices for micro- and optoelectronics and the development of silicon nanocrystals devices for memory applications.

She has authored and coauthored more than 80 papers published in peer-reviewed journals and in international conference proceedings which have been cited about 1200 times (h-index of 20, SCOPUS source). She is coinventor of one U.S. Patent, participant of several national and EU research projects and supervisor of several Master and PhD theses. She serves as referee for outstanding international scientific journals and co-organized various symposia at the European Materials Research Society (E-MRS). Since 2012 she is member of the technical program committee of European Solid-State Device Conference (ESSDERC). She received the "Young Scientist Award" at the E-MRS (2003) and the "Premio per Dottori di Ricerca" from the Accademia Gioenia (2004).

Antonio Agresti

Electronic Engineering Department, University of Rome Tor Vergata, Via Del Politecnico 1, 00133, Roma (RM), ITALY, Tel.: +39 067259 7442 / 7777

antonio.agresti@uniroma2.it

Short Curriculum Vitae

Antonio Agresti is currently researcher at the Department of Electronic Engineering at the University of Rome Tor Vergata. He received his master degree in Electronic Engineer (with honors) from the University of Rome Tor Vergata (Italy) in 2011 and his Ph.D. degree with distinction and European label at the same University in 2015 with a period of six month spent at IMEC (Leuven, Belgium). He got a post-doctoral research fellow till 2016 from C.H.O.S.E. (Centre for Hybrid and Organic Solar Energy) at the University of Rome Tor Vergata (Italy), in the international context of graphene flagship. His research activity mainly concerns the realization, optimization and spectral characterization of organic and hybrid photovoltaic devices and in particular Dye Sensitized Solar Cells (DSCs), small molecule based solar

cells and perovskite based devices. Moreover, he is involved in the development of perovskite-graphene based photovoltaic technology by focusing the attention on the scaling-up towards large modules and panels. In the context of graphene flagship, he gained experience in graphene-based and 2-dimensional materials, perovskite-graphene interface optimization related to device's efficiency and stability. At the same time, concerning the device's long-term stability, his skills include Raman and fluorescence spectroscopy characterizations. He has authored and coauthored more than 20 papers published in peer-reviewed journals and in international conference proceedings which have been cited about 160 times (h-index of 8, SCOPUS source). He serves as referee for outstanding international scientific journals and he is periodically invited as speaker in several international conferences. In the context of photovoltaic research, he is currently collaborating with more than 20 national and international institutions leading in the perovskite and graphene fields.