PERSONAL INFORMATION

Marco Stefancich

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Google Scholar: https://scholar.google.it/citations?user=-rCf-ZwAAAAJ&hl=en

Date of birth 22/06/1971 | Nationality Italy

IN BRIEF

Always a misfit half scientist and half engineer, partly university and partly corporate trying to create something meaningful while oscillating between different worlds and never fully fitting in any of them or in any real job description.

Physics PhD with significant academic experience (research, teaching and mentoring) in the field of Solar Energy and then Additive Manufacturing at Universities and Research centres in Italy, United Arab Emirates and USA.
Around 120 recorded scientific contribution of which 70+ peer reviewed journal articles with 1300+ citations. h-index of 20.
Founder of two startups first in Concentrating Photovoltaic and a second one in the field of metal Additive Manufacturing.
Currently Senior Scientist for Corporate R&D for a major electricity utility in Dubai with responsibility for Solar, Water and Additive Manufacturing.

WORK EXPERIENCE

- 1-2017 to Present: Senior Researcher responsible for R&D division on Solar Energy, Water generation and Additive Manufacturing at Dubai Electricity and Water Authority (DEWA, Dubai, UAE)
- 10-2016: co-founder, CTO and majority shareholder of Fluid Metal 3D LLC, start-up company developing patented technology for room temperature metal 3D printing.
- 3-2008 to 1-2017: Tenured Researcher @ CNR-IMEM (National Research Centre, Institute for Materials for Electronics and Magnetism, Parma, Italy) http://www.imem.cnr.it/ (leave from 5/2010 to 9/2014)
- 5/2010 to 9/2014: Assistant Professor in Material Science and Engineering @ Masdar Institute of Science and Technology (Abu Dhabi, United Arab Emirates) www.masdar.ac.ae
- 5/2010 – 4/2011: Visiting Scientist @ Massachusetts Institute of Technology (Cambridge, MA, USA) http://web.mit.edu/
- 08/2006 -5/2009: Cofounder and research scientist for Development and Production of Photovoltaic Concentrator Systems @ Cpower srl (Ferrara, Italy)
- 3/2003 -3/2008: Full time Researcher @ CNR-INFM (National Research Centre, Unit for the Physics of the Matter, Ferrara, Italy) http://www.cnr.it/istituti/DatiGenerali.html?cds=110
- 10/1998 -3/2003: Junior Researcher, Temporary Positions @ University of Ferrara (Ferrara, Italy), http://unife.it/

Sector Physics, Material Science and Engineering

EDUCATION AND TRAINING

Replace with dates (from - to)

Physics PhD @ University of North Texas (Denton, Texas, USA) (GPA 3.98) 9/1995 -7/1998

Thesis: "Quantum-classical correspondence in weakly chaotic systems" Paolo Grigolini, Bruce J. West (http://digital.library.unt.edu/ark:/67531/metadc278244/m2/1/high_res_d/1002658935-stefancich.pdf)

Master in Physics (Italian "Laurea Magistrale"): University of Pisa and Scuola Normale Superiore (Nr.1 in Italy for Physics and top 30 in EU), Pisa (Italy), Physics, 7/1995

Thesis: "Anomalous Diffusion and Correspondence Principle" Laurea 110/110 cum Laude (4.0 GPA)

PERSONAL SKILLS

Mother tongue(s): Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	Excellent	Excellent	Excellent	Excellent	Excellent
	Teaching duties in English for 5+ years				
German	Basic	Basic	Basic	Basic	Basic

Teaching skills

- Taught for more than 20 semesters at Undegraduate, Master and Graduate level
- Designed and offered Graduate level "Advanced Solid State Physics" in 2012,
- Designed and offered Graduate level "Physics for Solid State Applications" in 2010
- Designed and offered a course in "Silicon Photovoltaics (SC1044)" at SPIE "Optics and Photonics" San Diego in 2011 (http://spie.org/x1145.xml?course_id=M0001169)
- Designed or adapted most of the Undergraduate courses taught in Italy.

Organisational / managerial skills

- Managing more than 10 researchers and technicians in R&D division of Dubai Electricity and Water Authority (DEWA) in the fields of Solar, Water and Additive Manufacturing research.
- Managing an R&D portfolio of more than 12 projects for DEWA in the fields of Solar PV, Water desalination, Additive Manufacturing for electrical systems O&M, Rapid Prototyping and sustainable building.
- Mentored in excess of 20 students and personally followed, as primary advisor, more than 10 through their Master or Phd (or equivalent).
- Managed a research group of 4 graduate students and 1 postdoc.
- Responsible for 14 Student's second level "laurea" (equivalent to Master degree according to the Bologna protocol of 1999) and 4 first level "laurea" (equivalent to Bachelor's) in Physics, Computer Science and Engineering.
- Graduated several MS and 3 PhD students while in the Arab Emirates.
- Extended project funding experience with more than 10 Projects successfully for a total amount exceeding 3 M$
- Founder with my students and principal scientist of start-up company Cpower S.r.l. (Italy) for realization and commercialization of photovoltaic concentrator. – 08/2006 to 10/2009
- Multiple private consultancies (e.g "determination of expected performances of a Concentrator Photovoltaic System and design of automatic system for MPPT tracking", 9-2008
- Co-Organizer of the "1st International School on Concentrated PV" at the University of Ferrara in collaboration with ENEA (Italian National Agency for New Technologies, Energy and Sustainable Economic Development). – 10/2006
- Recruiter for Masdar Institute of Science and Technology traveling internationally to student fairs (e.g. QS World Grad Schol Tour – Europe - Rome 4-7 March 2013)
- Organizer of public outreach campaign for student enrolment in the Physics Undergraduate school at the University of Ferrara. Improved enrollment by 60% the following season. (summer 2002). Participation to the Outreach Campaign in 2003
- Member of PhD admission committee, among many other, at Masdar Institute of Science and Technology – 2010 to end of 2011.

Research Results and Skills

Results

- 70+ peer reviewed papers, 3 patents, 100+ published contributions. Total 1350+ citation and h-ind. 20, i10-ind 40. (Google Scholar) https://scholar.google.it/citations?user=-rCf-ZwAAAAJ&hl=en
- Invited speaker at: International Society for Optics and Photonics (SPIE), Royal Society of Chemistry, National Renewable laboratories (NREL), Premio Sapio (Italy),
- Guest Editor for Special Issue "Optical Solutions for Solar Energy" in the "International Journal of Optics and Applications" (http://article.sapub.org/10.5923.s.optics.201401.html#Ref).
- Reviewer multiple times for "Progress in Photovoltaics", "Applied Optics", "Renewable Energy", "Optics Communications", "Nanotechnology" and other journals
- Organizer and Session Chair at the "Soiling Effect on PV Modules workshop" with DEWA & NREL in 2017 (https://www.dewa.gov.ae/en/about-dewa/news-and-media/press-and-news/latest-news/2016/04/dewa-organises-soiling)
- Organizer and session Chair at the "Inorganic Material for Photovoltaics" section at the Italian Crystal Growth conference in Parma (Italy) - 11/19/2010 (http://icg2010.imem.cnr.it/program.htm) and again in 2013 (http://icg2013.imem.cnr.it/committee.htm)
- Scientific Project Evaluator and inspector for multiple projects on behalf of the Italian Ministry of Economic Development
- PI or CO-PI in more than 10 founded projects for more than 3 M$ (while at Masdar, Univ. of Ferrara and CNR).

Skills/Competencies

- Solar energy and PV systems
- Additive Manufacturing for polymers, metals and construction materials and their applications.
- Material science (mostly for PV) including Silicon technology and smart materials with real-time controllable optical properties.
- Room temperature direct metal 3d printing by localized jet electrolytic deposition.
- Optical design and manufacturing (mostly for concentrator photovoltaics)

Computer skills

- Proficient in Windows/Unix/Linux environment and standard packages
- Programming in multiple languages (C, C++, Matlab, Java…) and platform (included embedded programming for PIC and Arduino platforms)
- Software Engineering experience (teaching at MS level for Computer Science)
- Digital electronic design and E-CAD (EAGLE + other…)
- Computer Aided Design (Autocad, Solid Works, SketchUp…)
- Optical simulation and Raytracing software (TracePro)
- Atomistic Modeling Software

Other skills

- Expertise in 3D printing (FDM, STL, SLM)
- Expertise in Chemical Laboratory, Clean Room Environment, Electronic laboratories
- Expertise in Optical laboratories
- Proficient with mechanical and electronic assembly
- Mechatronics designer

Publications of Marco Stefancich

11 most relevant published contributions

[1] H. Apostoleris, M. Stefancich, and M. Chiesa, "Concentrating Photovoltaics (CPV): The Path Ahead." Book Series: Green Energy and Technology; Springer International Publishing AG 2018, ISBN: 978-3-319-62979-7, https://doi.org/10.1007/978-3-319-62980-3

[2] H. Apostoleris, M. Stefancich, and M. Chiesa, "Tracking-integrated systems for concentrating photovoltaics," Nature Energy, vol. 1, p. 16018, 7 March 2016.

[3] M. Stefancich, A. Zayan, M. Chiesa, S. Rampino, D. Roncati, L. Kimerling, et al., "Single element spectral splitting solar concentrator for multiple cells CPV system," Optics express, vol. 20, pp. 9004-9018, 2012.

[4] H. Apostoleris, M. Chiesa, and M. Stefancich, "Improved transparency switching in paraffin–PDMS composites," Journal of Materials Chemistry C, 2015.

[5] C. Maragliano, M. Chiesa, and M. Stefancich, "Point-focus spectral splitting solar concentrator for multiple cells concentrating photovoltaic system," Journal of Optics, vol. 17, p. 105901, 2015.

[6] A. Antonini, M. Butturi, P. Di Benedetto, D. Uderzo, P. Zurru, E. Milan, et al., "Rondine® PV concentrators: field results and developments," Progress in Photovoltaics: Research and Applications, vol. 17, pp. 451-459, 2009.

[7] C. Maragliano, S. Lilliu, M. Dahlem, M. Chiesa, T. Souier, and M. Stefancich, "Quantifying charge carrier concentration in ZnO thin films by Scanning Kelvin Probe Microscopy," Scientific reports, vol. 4, 2014.

[8] M. Stefancich, L. Simpson, and M. Chiesa, "Automatic outdoor monitoring system for photovoltaic panels," Review of Scientific Instruments, vol. 87, p. 055104, 2016.

[9] J. Yang, E. Ziade, C. Maragliano, R. Crowder, X. Wang, M. Stefancich, et al., "Thermal conductance imaging of graphene contacts," Journal of Applied Physics, vol. 116, p. 023515, 2014.

[10] C. Malagu, V. Guidi, M. Stefancich, M. Carotta, and G. Martinelli, "Model for Schottky barrier and surface states in nanostructured n-type semiconductors," Journal of applied physics, vol. 91, pp. 808-814, 2002.

[11] D. Vincenzi, A. Busato, M. Stefancich, and G. Martinelli, "Concentrating PV system based on spectral separation of solar radiation," physica status solidi (a), vol. 206, pp. 375-378, 2009.

Further list of published articles (latest at the end)

[1] A. Parretta, A. Antonini, E. Milan, M. Stefancich, G. Martinelli, and M. Armani, "Optical efficiency of solar concentrators by a reverse optical path method," Optics letters, vol. 33, pp. 2044-2046, 2008.

[2] S. Rampino, F. Pattini, C. Malagù, L. Pozzetti, M. Stefancich, and M. Bronzoni, "Application of a substrate bias to control the droplet density on Cu (In, Ga) Se 2 thin films grown by Pulsed Electron Deposition," Thin Solid Films, vol. 562, pp. 307-313, 2014.

[3] G. Sala, D. Pachón, I. Antón, M. Vivar, H. Mohring, F. Klotz, et al., "IDEOCONTE project: searching the best Si-cells PV concentrator," presented at the 20th European Photovoltaic Solar Energy Conference and Exhibition, 2005.

[4] G. Martinelli and M. Stefancich, "7 Solar cell cooling," Concentrator photovoltaics, vol. 130, p. 133, 2007.

[5] A. Antonini, M. Stefancich, D. Vincenzi, C. Malagu, F. Bizzi, A. Ronzoni, et al., "Contact grid optimization methodology for front contact concentration solar cells," Solar energy materials and solar cells, vol. 80, pp. 155-166, 2003.

[6] A. Afonin, V. Baranov, V. Biryukov, M. Breese, V. Chepegin, Y. A. Chesnokov, et al., "High-efficiency beam extraction and collimation using channeling in very short bent crystals," Physical review letters, vol. 87, p. 094802, 2001.

[7] S. Bellucci, S. Bini, V. Biryukov, Y. A. Chesnokov, S. Dabagov, G. Giannini, et al., "Experimental study for the feasibility of a crystalline undulator," Physical review letters, vol. 90, p. 034801, 2003.

[8] S. Santos, K. R. Gadelrab, T. Souier, M. Stefancich, and M. Chiesa, "Quantifying dissipative contributions in nanoscale interactions," Nanoscale, vol. 4, pp. 792-800, 2012.

[9] S. Santos, M. Stefancich, H. Hernandez, M. Chiesa, and N. H. Thomson, "Hydrophilicity of a single DNA molecule," The Journal of Physical Chemistry C, vol. 116, pp. 2807-2818, 2012.

[10] S. Santos, K. R. Gadelrab, V. Barcons, J. Font, M. Stefancich, and M. Chiesa, "The additive effect of harmonics on conservative and dissipative interactions," Journal of Applied Physics, vol. 112, p. 124901, 2012.

[11] M. Stefancich, P. Allegrini, L. Bonci, P. Grigolini, and B. J. West, "Anomalous diffusion and ballistic peaks: A quantum perspective," Physical Review E, vol. 57, p. 6625, 1998.

[12] A. Parretta, C. Privato, G. Nenna, A. Antonini, and M. Stefancich, "Monitoring of concentrated radiation beam for photovoltaic and thermal solar energy conversion applications," Applied optics, vol. 45, pp. 7885-7897, 2006.

[13] A. Antonini, M. Stefancich, J. Coventry, and A. Parretta, "Modelling of compound parabolic concentrators for photovoltaic applications," International Journal of Optics and Applications, vol. 3, pp. 40-52, 2013.

[14] M. Bronzoni, M. Stefancich, and S. Rampino, "Role of substrate temperature on the structural, morphological and optical properties of CuGaSe 2 thin films grown by Pulsed Electron Deposition technique," Thin Solid Films, vol. 520, pp. 7054-7061, 2012.

[15] M. Chiesa, K. Gadelrab, M. Stefancich, P. Armstrong, G. Li, T. Souier, et al., "Investigation of nanoscale interactions by means of subharmonic excitation," The journal of physical chemistry letters, vol. 3, pp. 2125-2129, 2012.

[16] M. Diamanti, K. Gadelrab, M. Pedeferri, M. Stefancich, S. Pehkonen, and M. Chiesa, "Nanoscale investigation of photoinduced hydrophilicity variations in anatase and rutile nanopowders," Langmuir, vol. 29, pp. 14512-14518, 2013.

[17] M. Diamanti, T. Souier, M. Stefancich, M. Chiesa, and M. Pedeferri, "Probing anodic oxidation kinetics and nanoscale heterogeneity within TiO 2 films by Conductive Atomic Force Microscopy and combined techniques," Electrochimica Acta, vol. 129, pp. 203-210, 2014.

[18] C. Maragliano, L. Colace, M. Chiesa, S. Rampino, and M. Stefancich, "Three-Dimensional Cu (InGa) Se Photovoltaic Cells Simulations: Optimization for Limited-Range Wavelength Applications," IEEE Journal of Photovoltaics, vol. 3, pp. 1106-1112, 2013.

[19] Y. M. Omar, C. Maragliano, M. Chiesa, A. Al Ghaferi, and M. Stefancich, "Reconciling macro-with nano-carrier mobility measurements in organic photovoltaic blends," Applied Physics Letters, vol. 104, p. 173905, 2014.

[20] G. Martinelli, M. Stefancich, and A. Antonini, "Spectral Splitting-Based Radiation Concentration Photovoltaic System," US Patent US20080149162A1, 26 June 2008.

[21] D. Vincenzi, M. Stefancich, S. Baricordi, M. Gualdi, G. Martinelli, A. Parretta, et al., "Effects of irradiance distribution uneveness on the ohmic losses of CPV receivers," Proc. 24th EU PVSEC, pp. 725-8, 2009.

[22] D. Vincenzi, M. Butturi, M. Stefancich, C. Malagu, V. Guidi, M. Carotta, et al., "Low-power thick-film gas sensor obtained by a combination of screen printing and micromachining techniques," Thin Solid Films, vol. 391, pp. 288-292, 2001.

[23] M. Stefancich, M. Butturi, D. Vincenzi, and G. Martinelli, "Mechanical effects of chemical etchings on monocrystalline silicon for photovoltaic use," Solar energy materials and solar cells, vol. 69, pp. 371-377, 2001.

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[25] T. Souier, S. Santos, A. Al Ghaferi, M. Stefancich, and M. Chiesa, "Enhanced electrical properties of vertically aligned carbon nanotube-epoxy nanocomposites with high packing density," Nanoscale research letters, vol. 7, p. 1, 2012.

[26] T. Souier, C. Maragliano, M. Stefancich, and M. Chiesa, "How to achieve high electrical conductivity in aligned carbon nanotube polymer composites," Carbon, 2013.

[27] T. Souier, G. Li, S. Santos, M. Stefancich, and M. Chiesa, "Conductive scanning probe microscopy of nanostructured Bi 2 Te 3," Nanoscale, vol. 4, pp. 600-606, 2012.

[28] S. Santos, K. R. Gadelrab, A. Silvernail, P. Armstrong, M. Stefancich, and M. Chiesa, "Energy dissipation distributions and dissipative atomic processes in amplitude modulation atomic force microscopy," Nanotechnology, vol. 23, p. 125401, 2012.

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[30] A. Parretta, A. Antonini, M. Stefancich, G. Martinelli, and M. Armani, "Optical characterization of CPC concentrator by an inverse illumination method," Proc. 22th EU PVSEC, pp. 740-4, 2007.

[31] A. Parretta, A. Antonini, M. Stefancich, V. Franceschini, G. Martinelli, and M. Armani, "Laser Characterization of 3D-CPC Solar Concentrators," 22nd EPVSEC, Fiera Milano, pp. 3-7, 2007.

[32] A. Parretta, A. Antonini, M. Butturi, P. Di Benedetto, E. Milan, M. Stefancich, et al., "How to 'display'the angle-resolved transmission efficiency of a solar concentrator reversing the light path," Proc. 23rd EU PVSEC, pp. 95-8, 2008.

[33] C. Maragliano, A. Zayan, and M. Stefancich, "Three-dimensional point-focus spectral splitting solar concentrator system," International Journal of Optics and Applications, vol. 4, pp. 6-11, 2014.

[34] C. Maragliano, T. Milakovich, M. Bronzoni, S. Rampino, E. A. Fitzgerald, M. Chiesa, et al., "Demonstration of a novel dispersive spectral splitting optical element for cost-effective photovoltaic conversion," arXiv preprint arXiv:1508.00210, 2015.

[35] C. Maragliano, D. Heskes, M. Stefancich, M. Chiesa, and T. Souier, "Dynamic electrostatic force microscopy technique for the study of electrical properties with improved spatial resolution," Nanotechnology, vol. 24, p. 225703, 2013.

[36] C. Maragliano, A. Glia, M. Stefancich, and M. Chiesa, "Quantifying electrostatic force contributions in electrically biased nanoscale interactions," Journal of Applied Physics, vol. 115, p. 124311, 2014.

[37] C. Maragliano, A. Glia, M. Stefancich, and M. Chiesa, "Effective AFM cantilever tip size: methods for in-situ determination," Measurement Science and Technology, vol. 26, p. 015002, 2014.

[38] C. Maragliano, M. Chiesa, and M. Stefancich, "Point-focus spectral splitting solar concentrator for multiple cells concentrating photovoltaic system," Journal of Optics, vol. 17, p. 105901, 2015.

[39] C. Maragliano, H. Apostoleris, M. Bronzoni, S. Rampino, M. Stefancich, and M. Chiesa, "Efficiency enhancement in two-cell CIGS photovoltaic system with low-cost optical spectral splitter," Optics express, vol. 24, pp. A222-A233, 2016.

[40] S. Lilliu, C. Maragliano, M. Hampton, M. Elliott, M. Stefancich, M. Chiesa, et al., "EFM data mapped into 2D images of tip-sample contact potential difference and capacitance second derivative," Scientific reports, vol. 3, p. 3352, 2013.

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[42] V. Guarnieri, S. BRIDA, B. MARGESIN, F. GIACOMOZZI, M. ZEN, A. VASILIEV, et al., "Low-Power Silicon Microheaters On A Thin Dielectric Membrane With Thick-Film Sensing Layer For Gas Sensor Applications," Microelectronics, Microsystems and Nanotechnology, 2000.

[43] J. S. Coventry, A. W. Blakers, E. Franklin, and G. Burgess, "Analysis of the radiation flux profile along a PV through concentrator," 2005.

[44] M. Chiesa, K. R. Gadelrab, A. Verdaguer, J. Segura, V. Barcons, N. H. Thomson, et al., "Energy dissipation in the presence of sub-harmonic excitation in dynamic atomic force microscopy," EPL (Europhysics Letters), vol. 99, p. 56002, 2012.

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[49] M. Armani, W. Sparber, A. Parretta, A. Antonini, M. Butturi, and M. Stefancich, "Performance Monitoring of Different PV Systems installed in Northern Italy," Institute for Renewable Energy, EURAC research, Bolzano, 2007.

[50] H. Apostoleris, M. Stefancich, A. Alexander-Katz, and M. Chiesa, "CPV for the rooftop market: novel approaches to tracking integration in photovoltaic modules," Bulletin of the American Physical Society, 2016.

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[54] M. Armani, A. Parretta, A. Antonini, M. Butturi, and M. Stefancich, "Models for efficiency prediction of different PV module technology," ed: 4DV.

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[63] A. Parretta, A. Antonini, M. Stefancich, G. Martinelli, and M. Armani, "Fluxmeter For Point Focus Solar Concentrators," in 4th International Conference on Solar Concentrators for the Generation of Electricity or Hydrogen, 2007.

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