

PERSONAL INFORMATION

Roberto Russo



📍 CNR-ISASI, Via Pietro Castellino 111, 80131, Napoli, Italy



Sex Male | Date of birth 11/10/1968 | Nationality Italian

JOB SECTOR

Scientific and Technological Research in:

Solar energy conversion

Thin film deposition by PVD

Structural, optical and electronic characterisation of thin films and multilayers

WORK EXPERIENCE

From 2014 to present

Senior Researcher at CNR (National Research Council of Italy)

Institute of Applied Science and Intelligent System, Napoli unit, Napoli, Italy

- Coordinator of the Energy Conversion research group (3 researchers, 3 PhDs and 1 post-doc).
- Responsible of optical Thin film deposition by PVD (Physical Vapour Deposition)
- Responsible of the optical characterisation laboratory
- Responsible of the joint laboratory ISASI-TRESOL
- Principal Investigator in projects concerning thin film deposition in high vacuum and in Ultra High Vacuum for fabrication of optical and superconducting devices
- Development of new Selective Solar Absorbers for enhance the solar to thermal energy conversion efficiency at temperature higher than 150°C
- Development of innovative Infrared Mirror to recover the thermal energy losses and increase efficiency in solar thermal device at mid and high temperature

From 2009 to 2014

Researcher Staff at CNR (National Research Council of Italy)

Institute of Cybernetic "E. Caianiello", Pozzuoli, Napoli, Italy

- Co-Principal Investigator in projects concerning thin film deposition in high vacuum and in Ultra High Vacuum for fabrication and characterization of superconducting devices for nanomagnetism and quantum effects
- Development of technique to measure magnetic nanoparticle using nanoSQUIDS.
- Study of topology induced quantum effect in arrays of Josephson junctions

From 2003 to 2009

Post-Doc at University of Naples and CNR (National Research Council of Italy)

CNR-ISASI (group coordinator Prof. Paolo Silvestrini), Napoli, Italy

- Responsible of Thin film deposition by PVD (Physical Vapour Deposition)
- Participating in National and international projects concerning thin film deposition in High Vacuum and in Ultra High Vacuum mainly to study superconducting and quantum phenomena

From 1999 to 2003

Post-Doc at University of Rome "Tor Vergata"

Physic Department, (group leader Prof. Matteo Cirillo) Rome, Italy

- Responsible of Thin film deposition by PVD (Physical Vapour Deposition)
- Participation in National and International project for the development of UHV deposition techniques.

From 1997 to 1999

Post- Doc at University of Salerno

Physic department, Salerno Italy (group leader Prof. L. Maritato)

- Responsible of Thin film deposition by PVD (Physical Vapour Deposition)

From 1993 to 1997

Technical student, Fellow and associated at CERN

Surface Material Group Responsible Dr. Cristoforo Benvenuti, CERN, Geneva, Switzerland

- Responsible of Thin film deposition by PVD (Physical Vapour Deposition)
- Experience in Ultra High Vacuum systems, leak detection, getter activation, getter pumping

EDUCATION AND TRAINING

1994 Physic degree 110 "Cum Laudae"
University of Naples "Federico II", Napoli, Italy

PERSONAL SKILLS

Mother tongue(s) Italian

Other language(s)	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	B2	C1	B2	B2	B2
France	B2	B2	B1	B1	B2

Job related skills Problem solving, critical thinking, highly collaborative, attention to details, working in groups

Publications About 100 scientific papers on peer review journals (scopus) and several book chapter nad conference papers
H-index: 19 (I-10 index: 34) <https://scholar.google.it/citations?hl=it&user=T-fn6jAAAAAJ>
H-index 16 on Scopus <https://www.scopus.com/authid/detail.uri?authorId=7201443992>

- [1] De Luca, D., Amrutha, V., *et al.* (2023) 'Detailed studies on sputter-deposited Hf and HfC thin films for solar energy devices', *Solar Energy Materials and Solar Cells*, 255, p. 112304. Available at: <https://doi.org/10.1016/j.solmat.2023.112304>.
- [2] De Luca, D., Strazzullo, P., *et al.* (2023) 'High vacuum flat plate photovoltaic-thermal (HV PV-T) collectors: Efficiency analysis', *Applied Energy*, 352, p. 121895. Available at: <https://doi.org/10.1016/j.apenergy.2023.121895>.
- [3] De Luca, D., Caldarelli, A., *et al.* (2023) 'Modeling of energy and exergy efficiencies in high vacuum flat plate photovoltaic-thermal (PV-T) collectors', *Energy Reports*, 9, pp. 1044–1055. Available at: <https://doi.org/10.1016/j.egyr.2022.11.152>.
- [4] De Maio, D. *et al.* (2022) 'Solar selective coatings for evacuated flat plate collectors: Optimisation and efficiency robustness analysis', *Solar Energy Materials and Solar Cells*, 242, p. 111749. Available at: <https://doi.org/10.1016/j.solmat.2022.111749>.
- [5] D. De Luca *et al.*, 'Tuning silicon nitride refractive index through radio-frequency sputtering power', *Thin Solid Films*, vol. 737, p. 138951, Nov. 2021, doi: [10.1016/j.tsf.2021.138951](https://doi.org/10.1016/j.tsf.2021.138951).
- [6] D. De Maio *et al.*, 'Multilayers for efficient thermal energy conversion in high vacuum flat solar thermal panels', *Thin Solid Films*, vol. 735, p. 138869, Oct. 2021, doi: [10.1016/j.tsf.2021.138869](https://doi.org/10.1016/j.tsf.2021.138869).
- [7] D'Alessandro, C. *et al.* (2022) 'Calorimetric testing of solar thermal absorbers for high vacuum flat panels', *Solar Energy*, 243, pp. 81–90. Available at: <https://doi.org/10.1016/j.solener.2022.07.039>.
- [8] C. D'Alessandro *et al.*, 'Low cost high intensity LED illumination device for high uniformity solar testing', *Solar Energy*, vol. 221, pp. 140–147, Jun. 2021, doi: [10.1016/j.solener.2021.04.017](https://doi.org/10.1016/j.solener.2021.04.017).
- [9] C. D'Alessandro *et al.*, 'Performance analysis of evacuated solar thermal panels with an infrared mirror', *Applied Energy*, vol. 288, p. 116603, Apr. 2021, doi: [10.1016/j.apenergy.2021.116603](https://doi.org/10.1016/j.apenergy.2021.116603).
- [10] D. De Maio *et al.*, 'A Selective Solar Absorber for Unconcentrated Solar Thermal Panels', *Energies*, vol. 14, no. 4, p. 900, Feb. 2021, doi: [10.3390/en14040900](https://doi.org/10.3390/en14040900).

Project **Responsible** of the following International and National projects on **solar energy topics**:

- PENNEW: *Full Sun Spectrum Exploitation for Carbon-free Multi-generation Energy Applications* Bando vEIColo della Fondazione della Compagnia San Paolo (july-2024-June 2025 Budget 40K€)
- EECOPVT: *Design of integrated absorbers for high Efficient solar Energy COntversion in PhotoVoltaic-Thermal devices*, PRIN-PNRR 2022 (Nov 2023 - Nov 2025 CNR budget 80K€)
- ESSTEAM : *Highly Efficient Solar Steam Generation for Industrial Process Heat*; European project financed in EUROSTAR program (August 2021-July 2024, CNR budget 196k€)
- Tisolar "*Improving efficiency in solar thermal panel*" research contracts funded by TRESOL (private company) from 2018 of going: CNR budget 250K€
- 2 PhD grants bando PON "*New solar absorber for efficient solar conversion in high vacuum flat*

panels" and "Infrared mirrors for efficient photon recycling" in collaboration with Prof. P. Bermel Purdue University (USA) and University of Napoli "Federico II" : total budget 150k€) XXXIV and XXXV ciclo

- PhD grants Bando "CNR-Confindustria" in collaboration with Physic department "E.Pancini", University of Napoli "Federico II" and the private company TRESOL for developing new solution for solar energy conversion under vacuum XXXIV ciclo (Phd student Daniela De Luca)
- PhD grants Bando "CNR-Confindustria" in collaboration with Industrial engineering department University of Napoli "Federico II" and the private company TRESOL for developing new solution for solar energy conversion under vacuum XXXVI ciclo (PhD student Eliana Gaudino)

Participation in several International and national Projects, among them:

- Titolo *BEST4U Bifacial Efficient Solar cell Technology with 4 terminal architecture for Utility scale* PON Ricerca e Innovazione 2014-2020 Importo totale finanziamento 3M€ periodo 2020-2022
- Titolo progetto: *Se@ME-Sustainable e-maritime @ssistance for Marine Employees, Passengers and Yachtsmen* Progetto FESR Campania Importo finanziamento: 3M€ (periodo 2012-2015)
- Titolo progetto: *SMART HEALTH- CLUSTER OSHD-SMART FSE-STAY WELL* PON Ricerca e Competitività 2007-2013 Importo totale finanziamento 1,5 M€ (periodo 2012-2015)
- Titolo progetto: *CARE Coordinated Accelerator Research in Europe* Progetto Europeo Importo totale finanziamento 15M€ (periodo 2004-2008)

Conference Activity

- Member of the Program Scientific committee of the conference "New Concepts in Solar and Thermal Radiation Conversion" IV (SPIE Optics + Photonic 1-5 August 2021 San Diego)
- Chair of the session: "Optical System for Solar Energy" in "Optical Microsystems 19" Topical meeting of the European Optic Society , 9-11 September 2019, Capri (Napoli), Italy

Several invited Talks in international conferences among them:

- Title: "*Multilayered selective solar absorber for unconcentrated solar thermal applications*" in Conference: New Concepts in Solar and Thermal Radiation Conversion IV in SPIE Optics + Photonics 1-4 August 2021 San Diego USA
- Title: "*Radiation management to increase efficiency in solar thermal and PV-T applications*" EOSAM Porto, Portugal, September 12-16, 2022

more than 20 oral contributions to international conference

Teaching activities

Tutor of nine PhD students on solar energy related topics and 10 graduate students (currently, tutor of 5 PhDs and 2 graduate students), Teaching professor at Master "Surface treatments for Industry" (post graduate specialization) for two academic years and of several course of Physics (mechanics, thermodynamics, electromagnetism and optics)

"According to law 679/2016 of the Regulation of the European Parliament of 27th April 2016, I hereby express my consent to process and use my data provided in this CV"