

Curriculum vitae – Giulio Ferrando

Sex: M | Date of birth: : Citizenship: Italian | Driving license: B

Professional Experience

Didactic tutor | Università di Genova | Jan 2023 – Feb 2023

- Didactic assistance activity (40 hours) at the Physics Department laboratories during the High School students stages

Didactic tutor | Università di Genova | Oct 2021 – Jun 2022

- Didactic assistance activity for 1st year students of Management Engineering (60 hours)

Education

Sciences and Technologies of Chemistry and Materials Ph.D. | 2021- ongoing | Università di Genova

- Level EQF 8
- Thesis title “Light harvesting in nanofabricated hybrid plasmonic -2D semiconductors”

Master’s Degree in Physics | 2019-2021 | Università di Genova

- LM-17 – Level EQF 7
- Thesis: “Amplificazione della raccolta di luce in regime di “flat optics” tramite nanofabbricazione di matrici metalliche e dielettriche”
- Final evaluation: 110/110 cum laude

Bachelor’s Degree in Physics | 2016-2019 | Università di Genova

- L-30 – Level EQF 6
- Thesis: “Ferromagnetismo ed interazioni di scambio”
- Final evaluation: 103/110

High School License | 2011-2016 | Liceo Scientifico L. Lanfranconi (GE)

- Scientific High School
- Final evaluation: 90/100

Prizes and Awards

- Best Master thesis award – SIOF (Società Italiana Ottica e Fotonica) - 2021

Personal skills

FOREIGN LANGUAGES

- English – good level
First Certificate in English – Cambridge English Language Assessment, 02/2016 (Level B2)

PROFESSIONAL SKILLS

FABRICATION TECHNIQUES

- Physical deposition of large area ultra-thin films via thermal evaporation, ion beam sputtering deposition and RF sputtering in high vacuum systems
- Surface self-organized nanostructuring and materials modification under ion beam irradiation
- Oxygen plasma and Reactive Ion Etching (RIE)
- High temperature sulfurization processes for large area Transition Metal Dichalcogenides (MoS₂, WS₂) and their van der Waals heterostructures (vertical stacking)
- Electron Beam Lithography and Laser Interference Lithography (LIL)
- Thermal Scanning Probe Lithography (t-SPL) technique on a NanoFrazor Scholar tool
- CAD design

CHARACTERIZATION TECHNIQUES

- Optical and micro-optical spectroscopy (transmission, reflection, absorption configurations)
- Micro-Raman spectroscopy and photoluminescence
- Atomic Force Microscopy
- Scanning Electron Microscopy and Energy-Dispersive X-Ray Spectroscopy

DIGITAL SKILLS

- **Office automation:** Word (Intermediate) | Excel (Intermediate) | Powerpoint (Intermediate)
- **CAD software:** Intermediate (OnShape)
- **Operative systems:** base
- **Graphics and Multimedia:** base
- **Data analysis (OriginPro):** base
- **Arduino:** base
- **Python:** base
- **C++:** base

Scientific publications

- M. Barelli, **G. Ferrando**, M. C. Giordano, F. Buatier de Mongeot, "Wavelength-Dependent Plasmonic Photobleaching of Dye Molecules by Large-Area Au Nanostripe Arrays." *ACS Appl. Nano Mater.* 2022, 5 (3), 3470–3479.
<https://doi.org/10.1021/acsanm.1c04087>
- **G. Ferrando**, M. Gardella, M. Barelli, D. Chowdhury, P. D. Long, N. S. Hieu, M. C. Giordano, F. Buatier de Mongeot "Plasmonic and 2D-TMD Nanoarrays for Large-Scale Photon Harvesting and Enhanced Molecular Photo-Bleaching" *EPJ Web Conf.* 2022, 266, 09003.
<https://doi.org/10.1051/epiconf/202226609003>.
- **G. Ferrando**, M. Gardella, G. Zambito, M. Barelli, D. Chowdhury, M.C. Giordano, F. Buatier de Mongeot, "Flat optics Hybrid MoS₂/polymer films for photochemical conversion", *Nanoscale*, 2023, 15, 1953,
<https://pubs.rsc.org/en/content/articlehtml/2023/nr/d2nr05004h>
- C. Rossi, F. Buatier de Mongeot, **G. Ferrando**, G. Manzato, M. Meyer, L. Parodi, S. Sgobba, M. Sortino, E. Vaglio, "Study on Properties of AISI 316L Produced by Laser Powder Bed Fusion for High Energy Physics Applications" *Nucl. Instruments Methods Phys. Res. Sect. A Accel. Spectrometers, Detect. Assoc. Equip.* 2023, 1055, 168459.
<https://doi.org/10.1016/j.nima.2023.168459>.

- **G. Ferrando**, M. Gardella, G. Zambito, M. Barelli, D. Chowdhury, M.C. Giordano, F. Buatier de Mongeot, "Hybrid MoS₂/polymer nanoarrays for large-scale photon harvesting and enhanced molecular photo-bleaching", *EPJ Web Conf.*, 287 (2023) 05028, <https://doi.org/10.1051/epjconf/202328705028>
- L. Ramò, M. C. Giordano, **G. Ferrando**, P. Canepa, F. Telesio, L. Repetto, F. Buatier de Mongeot, M. Canepa and F. Bisio, "Thermal Scanning-Probe Lithography for Broad-Band On-Demand Plasmonic Nanostructures on Transparent Substrates". *ACS Appl. Nano Mater.* **2023**, 6 (19), 18623–18631. <https://doi.org/10.1021/acsanm.3c04398>.
- L. Ramò, M. C. Giordano, **G. Ferrando**, P. Canepa, L. Repetto, F. Buatier de Mongeot, M. Canepa and F. Bisio, "Non-Invasive Fabrication of Plasmonic Nanostructures on Dielectric Substrates Coated with Transparent-Conductive Oxide". *EPJ Web Conf.* 2023, 287, 04001. <https://doi.org/10.1051/epjconf/202328704001>.
- M. C. Giordano*, L. D. Pham*, **G. Ferrando***, H. S. Nguyen, C. H. Le, T. H. Mai, G. Zambito, M. Gardella, and F. B. de Mongeot, "Self-Organized Plasmonic Nanowire Arrays Coated with Ultrathin TiO₂ Films for Photoelectrochemical Energy Storage", *ACS Applied Nano Materials* **2023** 6 (23), 21579-21586, <https://doi.org/10.1021/acsanm.3c03546>
*equal contribution
- M. Gardella, G. Zambito, **G. Ferrando**, F. Bisio, M.C. Giordano, F. Buatier de Mongeot, "Large area van der Waals MoS₂ - WS₂ heterostructures for visible-light energy conversion", submitted at *RCS Applied Interfaces*
- M. Gardella, G. Zambito, **G. Ferrando**, L. Ferrari Barusso, M.C. Giordano, F. Buatier de Mongeot, "Maskless synthesis of van der Waals heterostructure arrays engineered for light harvesting on large area templates", submitted at *Advanced Functional Materials*

Conferences

- **Italian Conference on Optics and Photonics (ICOP)**, Trento (ITA), June 15-17, 2022
Poster: "Photon harvesting in large-area flat-optics nanoarrays"
- **International school on plasmonics and nano-optics**, Turin (ITA), July 4- 7, 2022
Talk: "Large-scale metasurfaces for plasmon enhanced photobleaching of dye molecules"
Poster: "Microfabricated SiN membrane applied as a free-standing waveguide for refractive index sensing in large-area flat-optics nanoarrays"
- **EOS Annual Meeting (EOSAM)**, Porto (PT), September 12-16, 2022
Talk: "Plasmonic and 2D-TMD nanoarrays for large-scale photon harvesting and enhanced molecular photo-bleaching"
- **ISMES-X Materials for Energy and Sustainability**, Erice (ITA), July 3-8, 2023
Poster: "Photon harvesting in large area flat optics nanoarrays"
- **EOS Annual Meeting (EOSAM)**, Dijon (FR), September 11-15, 2023
Talk: "Hybrid MoS₂/polymer nanoarrays for large-scale photon harvesting and enhanced molecular photo-bleaching"
- **Photonics Online Meetup**, online, November 13-14, 2023
Poster: "Light harvesting engineering in large area MoS₂/WS₂ heterostructures nanoarrays for photochemical applications"
- **MRS Fall meeting**, online, December 5-7, 2023
Talk: "Flat-optics photon harvesting in large-scale 2D semiconductor layers for photoconversion applications"

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Genova, 29/12/2023