CURRICULUM VITAE

PERSONAL INFORMATION

Name	**GIULIA GIOVANELLI**
Residence Address	VIA ACHILLE GRANDI 14, 61029 URBINO (PU)
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Nationality	Italian
Date of birth	13/04/1999

WORK EXPERIENCE

• 11/2024 – present

PHD PROGRAMME IN CIVIL, ENVIRONMENTAL AND MATERIALS ENGINEERING
Curriculum "Materials Engineering" (University of Modena and Reggio Emilia, "Enzo Ferrari" Department of Engineering)
Physics of Materials and Surfaces Team

My research focuses on surface science, with particular attention to the optical and electronic properties of surfaces, interfaces, thin films, and nanostructures. I employ a wide range of experimental techniques, including photoemission (UPS, XPS and angle-resolved), Electron Energy Loss Spectroscopy (EELS), luminescence, and UV–Vis absorption and reflectivity. I carry out this work within the group of Prof. Luca Pasquali.

During this year, my research has been structured around two main projects:

- Cooperative phase transition in bulk organic single crystals of ditBu-BTBT, in collaboration with Professor Luca Catalano (Department of Life Sciences, UNIMORE) and the Mike Ruggiero Research Lab (University of Rochester).
- *In-operando* measurements of 2D materials (primarily MoS_2-based transistors) during device operation, in collaboration with Dr. M. V. Nardi and Dr. M. Timpel (CNR-IMEM, Trento).

A further research topic I'm working on in collaboration with Dott. Mauro Borghi and Prof. Tibor Grasser (TU Wien) concerns the integration of fluoride-based dielectrics with 2D materials like MoS_2, utilizing Molecular Beam Epitaxy (MBE) under Ultra-High Vacuum (UHV) conditions, for the next-generation electronics.

Most of my experimental work takes place at the "*Enzo Ferrari*" Engineering Department, where our laboratory hosts a UHV chamber equipped with spectroscopic instrumentation. I also conduct experiments with synchrotron radiation,

primarily at the Elettra BEAR beamline (CNR-IOM, Trieste, Italy), focusing on Soft X-Ray Reflectivity. I have been involved in two scheduled beamtime proposals (28 Nov–3 Dec 2024 and 14–16 Jan 2025).

• 10/2023 – 07/2024

INTERNSHIP IN MATERIALS ENGINEERING AND APPLIED PHYSICS
University of Modena and Reggio Emilia
"Enzo Ferrari" Department of Engineering, Physics of Materials and Surfaces Team

Fundamentals of electronic spectroscopies applied to the growth of insulator interfaces on conductors.

Fluorides growth in UHV chamber. Morphology investigation of the surfaces through in-situ reflection high-energy electron diffraction (RHEED) and ex-situ atomic force microscope (AFM). Electronic properties investigation through x-ray photoelectron spectroscopy (XPS), ultraviolet photoelectron spectroscopy (UPS) and electron energy loss spectroscopy (EELS). Data analysis performed using the software IGOR Pro.

• 06/2016 – 06/2017

INTERNSHIP IN MEDICINAL CHEMISTRY
University of Urbino "Carlo Bo"

Independent management of the laboratory for organic synthesis and work-up activities: TLC, column chromatography, extractions with separatory funnel. Use of NMR spectroscopy and HPLC in collaboration with the tutor.

EDUCATION AND TRAINING

• 09/2022-17/10/2024

Master's Degree in *Materials Engineering (LM-53)*
University of Modena and Reggio Emilia
110/110 *Cum Laude*
Thesis title: *Comprehensive Study of SrF_2 growth on Highly-Oriented Pyrolytic Graphite: Temperature-Dependent van der Waals Epitaxy*
Weighted average of exams: **29.774 / 30** (*see attached document for details regarding the single exams*)

• 09/2019-07/2022

Bachelor Degree in *Industrial Engineering (L-9)*
University of Parma
110/110 *Cum Laude*

• 09/2013-07/2018

Chemical Expert
ITIS. E. Mattei Urbino
Chemistry, Materials, Biotechnologies 100/100 *Cum Laude*

LANGUAGE SKILLS

MOTHER TONGUE

ITALIAN

OTHER LANGUAGES

ENGLISH
Full professional proficiency
B2 level – *First Certificate in english* (05/2018)

SPANISH
Full professional proficiency

DANISH
Basic knowledge – School of languages "*Studieskolen*" (Copenaghen)

DIGITAL SKILLS

IGOR PRO 9 – Basic user
MICROSOFT EXCEL – Advanced user
PYTHON LANGUAGE – Basic user

PUBBLICATIONS

1) M. Borghi, G. Giovanelli, M. Montecchi, R. Capelli, A. Mescola, G. Paolicelli, S. D'Addato, T. Grasser, L. Pasquali, *Comprehensive Study of SrF_2 Growth on HOPG: Temperature-Dependent Van der Waals Epitaxy*, Applied Surface Science 680, 2025

2) G. Giovanelli, M. Borghi, A. Lodi, T. Grasser, L. Pasquali, *Thin Epitaxial Ionic Fluoride Films for Electronics Applications*, Surfaces 8(22), 2025

CONFERENCES

1) G. Giovanelli, A. Lodi, A. Giglia, N. Mahne, L. Catalano, L. Pasquali, Exploring Cooperative Phase Transitions in Bulk Organic Single Crystals, **ECOSS-38**, Braga, Portugal, 24–29 August 2025 (**oral contribution**)

2) M. Borghi, M. Mery, G. Giovanelli, A. Mescola, L. Pasquali, G. Paolicelli, T. Grasser, Growth and Characterization of Ultrapure LaF_3 Thin Films on Ag(111), **ECOSS-38**, Braga, Portugal, 24–29 August 2025 (**oral contribution**)

WORKSHOPS AND COURSES

HARD SKILLS

- Advanced material characterization by x-ray powder diffraction and transmission electron microscopy (24h), Prof. Rossella Arletti (UNIMORE), 03-06/06/2025
- Molecular Modelling for Industry: Tools and Applications for Advanced R&D (16h), Prof. Alfonso Pedone (UNIMORE), 16-18/06/2025
- X-ray tomography (10h), Prof. Gabriele Lanzafame (UNICT), 24-25/06/2025
- Surface engineering: case studies in advanced applications (16h), Prof. Luca Lusvarghi (UNIMORE), 8-12/09/2025

SOFT SKILLS

- Bibliographic research scientific writing and dissemination: tools, techniques and strategies (8h), Biblioteca di Ingegneria Enzo Ferrari Staff
- Scientific writing in english (20h), Prof. Adrian Wallwork, 9-20/06/2025