



FRANCESCO VILLASMUNTA

PhD Candidate in Photonics | BTU Cottbus–
Senftenberg & TH Wildau



[LinkedIn](#)



<https://www.francescovillasmunta.xyz>

EDUCATION

PhD candidate in Photonics

BTU Cottbus–Senftenberg,
Germany (expected Autumn
2025)

M.Eng. in Photonics

TH–Wildau, Germany (2018)
Grade: 1.0

M.Sc. in Materials Science & Technology

University of Rome Tor
Vergata, Italy (2018)
Grade: 110/110 cum Laude

B.Sc. in Physics

University of Bari Aldo Moro,
Italy (2015)

TEACHING

TH–Wildau (2019–2025)

- Photonic simulations, Plasma
Technology, Electrodynamics

AWARDS

- TH–Wildau Research Prize
2025

LANGUAGE

- Italian (Native)
- English (Professional)
- German (Intermediate)

PROFILE

PhD candidate with 7+ years of experience in silicon photonics and 3D integration technologies. Specializes in optical through-silicon waveguides, DRIE processes, and optical/surface metrology. Successful ZIM research project proposal. TH Wildau Research Prize 2025 recipient and experienced international conference presenter.

WORK EXPERIENCE

PhD candidate/ Scientific Worker

2020 – Present

TH Wildau & BTU Cottbus–Senftenberg

- Thesis: Optical Through–Silicon Waveguides for Chip–to–Chip Interconnections
- Supervisors: Prof. S. Schrader, Prof. A. Mai (Leibniz IHP), Prof. H. Schenk (Fraunhofer IPMS) | Funding: IKC–IE Project

Scientific Worker

2018 – 2022

TH Wildau

- Project HOPBIT – Hybride Silizium–Organik Photonik für die hochbitratige Datenübertragung
- Project KoSi – Messverfahren zur Kontrolle tiefer Siliziumstrukturen für die 3D–Chip–Integration

CORE TECHNICAL SKILLS

- Waveguides (theory, design, simulation, characterization)
- Fabrication: DRIE (Bosch & Cryogenic ICP–RIE), PECVD, Cleanroom Processes
- Metrology: SEM, Profilometry, White Light Reflection Interferometry, OES
- Simulation: COMSOL Multiphysics, Synopsys RSoft
- Programming: Python (+Streamlit & AI APIs), Arduino, IoT, LaTeX
- Data Analysis: OriginPro
- CAD Design: Fusion360, 3D printing
- Photo and Video editing (CaptureOne, DaVinci Resolve, Canva)

PUBLICATIONS & PATENTS (SELECTION)

- Villasmunta, F., et al. "Monolithically Integrated Optical Through–Silicon..." JSTQE (2025, submitted)
- Villasmunta, F., et al. "Design, fabrication, and characterization..." Proc. SPIE 12892, 128920I (2024)
- Villasmunta, F., et al. "PMMA Filled Through–Silicon Vias (TSVs)..." MikroSystemTechnik Kongress (2019)
- EU, US, PCT Patent Application: "Integrated Optical Waveguide" (2024)