



VITTORIO SAGGIOMO

SENIOR INSTRUMENT SCIENTIST
(OPEN HARDWARE AND SENSING)

CONTACT

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EDUCATION

- 2010
CHRISTIAN-ALBRECHT
UNIVERSITY OF KIEL (GERMANY)
 - PhD in Chemistry, *Summa cum Laude*
- 2007
FEDERICO II UNIVERSITY OF
NAPLES (ITALY)
 - Master in Chemistry

SOFT SKILLS

- Project Management (Six Sigma)
- Critical Thinking
- Creativity
- Leadership
- Resilience
- Effective Communication

LANGUAGES

- Italian: Native
- English: Fluent
- Dutch: Basics
- Spanish: Basic

PERSONAL INTERESTS

- Sci-Fi, Space Opera Books
- Olympic 10m air pistol
- Photography (digital and analog)
- Science Outreach
- Microcontroller programming
- Cooking

PROFILE SUMMARY

Senior R&D and project leader with 12+ years of experience in the design, development, validation, and deployment of sensing instruments and analytical systems operating outside traditional laboratory environments. Strong background in Open Hardware, microfluidics, optical sensing, and DIY Science.

Proven ability to lead multidisciplinary teams, manage complex projects from early concept (TRL 1–2) through prototyping and field validation (TRL 4–6), and deliver reliable, reproducible measurement systems. Experienced in coordination, international collaboration, and applied research with societal and environmental impact.

CORE SKILLS

Project Leadership

- Planning and structuring
- Risk management
- Budgeting
- Consortium participation
- Learning Six Sigma

Technical Expertise

- Microfluidics
- SLA/FDM fabrication
- Laser Cutter / CNC
- Analytical instrumentations (UV-Vis, Fluorimeter, HPLC, MS, NMR)
- Materials characterization
- Open hardware
- Electronics integration

Instrumentation and Sensing

- Optical microscopy
- Fluorescence imaging
- Field-ready monitoring
- Sensor development
- Data acquisition
- Particle sorting
- Airborne particles and exposome
- Microplastics
- Environmental DNA (eDNA)

Environmental Monitoring

- Portable air sensors
- Spatial and temporal sampling
- Biodiversity tools
- Citizen science

Teaching and Communication

- 10 years teaching Sensors and Devices
- Public outreach
- Workshops
- Training for engineers and scientists
- Invited lectures

SELECTED PUBLICATIONS

- [Creating an Open-source Hardware Ecosystem for Research and Sustainable Development.](#)
- [ESPressoscope: A small and powerful approach for in situ microscopy.](#)
- [EnderScope: a low-cost 3D printer-based scanning microscope for microplastic detection.](#)
- [Step-by-step: A microfluidic \(PDMS\) staircase device for size sorting microparticles down to 25 µm using a 3D-printed mold.](#)
- [T-Cup: A Cheap, Rapid, and Simple Home Device for Isothermal Nucleic Acid Amplification.](#)
- [Hacking 3D printers as laboratory robots.](#)
- [Microalgae as a Source for Stereolithography \(SLA\) 3D Printing Resin](#)



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PROFESSIONAL EXPERIENCE

Assistant > Associate Professor, Wageningen University 2017 - PRESENT
Senior R&D Project Leader for multi-year programmes involving sensing, microfluidics, particle characterisation, environmental measurements, and Open Hardware devices development and deployment.

Key achievements:

- Built and managed a (micro)fabrication and sensing lab integrating microfluidics, additive manufacturing, microscopy, electronics, and analytical equipment.
- Led design, validation, and documentation of Open Source Hardware scientific instruments used globally.
- Specialized in reproducible engineering workflows, community standards, and cross-functional collaboration for accessible R&D tools.
- National expert and point of contact in the Netherlands for Open Source Hardware
- Designed and managed interdisciplinary collaborations with biologists, environmental scientists, physicists, and engineers.

Teaching and knowledge transfer

- Taught "Sensors and Devices" for 10 years, training >500 students in sensing principles, device physics, signal processing, and practical instrumentation.
- Delivered hands-on workshops on sensing, microfluidics, microscopy, and Open Hardware.
- 53 published manuscripts, 2 book chapters, 1866 citations, H-index 22.

Early Career Roles (Postdoctoral fellow), University of Groningen / Wageningen 2010 - 2017

- Conducted materials research in polymer and (in)organic systems.
- Taught courses in materials science, fabrication, and rapid prototyping.
- Built early prototypes integrating custom materials and analytical components.

SELECTED RESEARCH RELEVANT TO ESA

Portable 3D-Printed Air Sampler for distributed citizen science sampling (*Unpublished but available upon request*)

- Led end-to-end development of a low-cost spatiotemporal bike-mountable air sampler for airborne particles (pollen, spores, microplastics) and environmental DNA.
- Combined microscopy, LAMP, DNA sequencing, and multi-layer bioinformatic analysis.

Microfluidic Device for Particle Sorting (PLOS ONE, 2023)

- Developed 3D printed size-sorting microfluidic structure (25–400 μm).
- Applied to microplastics, environmental particles, and zooplankton.

EnderScope: 3D-Printed Microscope for Microplastics and Environmental Samples (Phil. Trans. A, 2024)

- Created an automated field-ready microscope used for microplastic and environmental particle imaging.

Open-Source In Situ Microscope (PLOS ONE, 2024)

- Created a portable, IoT-connected imaging platform for environmental and biological particle observation.

TNO Collaboration - Coronaspresso T-Cup (Global Challenges, 2021)

- Joint work with TNO researchers on Sars-CoV-2 detection using coffee capsules for cost-effectiveness, scalability, and sustainability.

PUBLIC ENGAGEMENT AND OUTREACH

- Volunteer contributor to Biodiversity Days and citizen-science environmental monitoring initiatives.
- Exhibitor at Maker Faires, demonstrating 3D-printed microscopes for environmental and particle observation.
- Recognised contributor to Open Hardware initiatives; invited trainer for international courses (EMBO).

ADDITIONAL INFORMATION

- Currently enrolled in Six Sigma training, Green Belt trajectory (Technical University of Munich via edX)
- Experienced public speaker and workshop facilitator
- Open Source Hardware Evangelist
- Available for roles involving technical leadership, payload development, and system engineering.