

Vanessa Verrina

Curriculum vitae

Current Position

Postdoctoral Researcher in Biophotonics, May 2021–Today
Sapienza University of Rome, Latina, IT.

Project title: Gold nanoparticles assisted photo-thermal therapy via ultrafast laser sources (NANO-TAFT).

Supervisor: Prof. Luciano De Sio

Education

PhD in Physics, University of Amsterdam and Advanced Research Center for Nanolithography (ARCNL), Amsterdam, NL. 2015–2020

Thesis title: Laser-induced ultrasound for the detection of buried micro- and nano-structures.

Supervisor: Prof. Paul Planken

Master's degree in Materials Science, University of Calabria, Rende, Italy, 110 cum laude. 2011–2014

Thesis title: Realization and characterization of plasmonic nanoantennas layered with liquid crystalline compounds.

Supervisors: Prof. Cesare Umeton and Prof. Otto Muskens

Bachelor's degree in Materials Science, University of Calabria, Rende, Italy, 110 cum laude. 2008–2011

Thesis title: Characterization of plasmonic response of metallic nanoparticles using liquid-crystalline materials.

Supervisor: Prof. Cesare Umeton

Internships

Master project internship, February 2014 - September 2014
University of Southampton, Southampton, UK.

During my master, I was awarded with the European scholarship "Erasmus placement". Here I got the opportunity to work under the supervision of Prof. Otto Muskens on spatial modulation microscopy on single gold nanoantenna layered with liquid crystals.

Conferences and schools

Face2Phase Conference, Delft, NL, Talk. October 2019

Physics@Veldhoven Conference, Veldhoven, NL, January 2019
Talk.

- 42th Annual Meetings NNV AMO Lunteren**, *Lunteren*, NL, Poster. **October 2018**
- Laser Ultrasonics 2018**, *Nottingham*, UK, Poster. **July 2018**
- Physics@Veldhoven Conference**, *Veldhoven*, NL, Poster. **January 2018**
- Physics@FOM Veldhoven Conference**, *Veldhoven*, NL, Poster. **January 2017**
- 40th Annual Meetings NNV AMO Lunteren**, *Lunteren*, NL, Poster. **October 2016**
- NanoPlasm Conference**, *Cetraro*, Italy, Poster. **June 2016**
- Physics@FOM Veldhoven Conference**, *Veldhoven*, NL, Poster. **January 2016**
- International Symposium on Extreme Ultraviolet Lithography**, *Maastricht*, NL, Poster. **October 2015**
- International School of Atomic and Molecular Spectroscopy - ISAMS**, *Erice*, Italy, Summer School. **July 2015**

Collaborations

- External collaborator ASML**, *Amsterdam*, NL. **2015 - 2020**
My PhD was carried out in close collaboration with ASML, the world-leader manufacturer of photolithography systems for the semiconductor industry. During my PhD, I conducted photoacoustic experiments for ASML and their customers.
- Permanent visitor at AMOLF**, *Amsterdam*, NL. **2015 - 2020**
My PhD was carried out in close collaboration with the NWO-Institute for Atomic and Molecular Physics (AMOLF) NanoLab. Here I had access to their facilities for nanostructures fabrication and characterization.

Outreach

- Co-organizer of the "Open Day of Amsterdam Science Park" for ARCNL**, *ARCNL*, Amsterdam, NL. **2016 - 2020**
The aim of this yearly meeting is to show to both a specialised and non-specialised audience the research carried out by the main research institutes of Amsterdam. I was one of ARCNL representatives, giving demonstrations and organising lab tours.
- Social media manager for *Heroes of Physics!***, *ARCNL*, Amsterdam, NL. **November 2017**
The Netherlands Organisation for Scientific Research (NWO) organized a Twitter campaign with the aim of advertising the diverse physics community in the Netherlands. I was chosen from NWO to conduct this campaign as ARCNL representative.
- Materials Science ambassador for the outreach exhibition "Unical, ti presento campus!"**, *UNICAL*, Rende, Italy. **July 2013 - August 2013**
The exhibition was aimed at advertising the teaching offer of UNICAL. I was an ambassador for the Physics department.

Honors and Awards

Editor's pick on APL. **August 2020**
The article *Photoacoustic detection of low duty cycle gratings through optically opaque layers* published in the journal Applied Physics Letter was selected as Editor's pick.

Graduated Summa cum laude. **December 2014**
Master degree in Materials Science

Erasmus Placement scholarship winner, *During my master, I was awarded with the European scholarship "Erasmus placement", which allowed me to carry out my master project research abroad.* **January 2014**

Front cover Nanoscale. **December 2012**
The article *Double active control of the plasmonic resonance of a gold nanoparticle array* was chosen for the front cover image of the journal Nanoscale, Issue 24, 2012

Graduated Summa cum laude. **December 2011**
Bachelor degree in Materials Science.

Miscellaneous

Chair of the ARCNL Staff Association (PV), Amsterdam, NL. **October 2015 - 2020**

The staff association, or personeelsvereniging (PV) in Dutch, offers ARCNL employees the possibility for diversion. Here I lead the PV group in organising social and cultural activities for the whole research institute.

Student representative of the council chamber of the Physics Department, UNICAL, Rende, Italy. **2012 - 2014**

I was elected as representative of the Materials Science students in the Physics Department council chamber. Here I learned about many aspects of the department's management and organisation.

Experimental skills

E-beam Lithography

Electron Microscopy

FIB

Photoacoustics

Optical setups design

Plasmonics

Nanofabrication

Optical Microscopy

AFM

Pump-Probe technique

Metrology

Liquid crystals

Software skills

Python: Very good

Latex: Very Good

CST: Good

COMSOL: Basic

Fortran: Basic

C++: Basic

Languages

English: Fluent

Italian: Mother-tongue

Dutch: Elementary knowledge

Publications

- [1] Front cover. *Nanoscale*, 4:7603–7603, 2012.
- [2] Alessandro Antoncetti, Hao Zhang, Stephen Edward, Vanessa Verrina, Paul C. M. Planken, and Stefan Witte. High-resolution microscopy through optically opaque media using ultrafast photoacoustics. *Opt. Express*, 28(23):33937–33947, Nov 2020.
- [3] Luciano De Sio, Alastair Cunningham, Vanessa Verrina, Caterina Maria Tone, Roberto Caputo, Thomas Bürgi, and Cesare Umeton. Double active control of the plasmonic resonance of a gold nanoparticle array. *Nanoscale*, 4:7619–7623, 2012.
- [4] Stephen Edward, Hao Zhang, Irwan Setija, Vanessa Verrina, Alessandro Antoncetti, Stefan Witte, and Paul Planken. Detection of hidden gratings through multilayer nanostructures using light and sound. *Phys. Rev. Applied*, 2020.
- [5] Vanessa Verrina, Guido den Haag, Aurele Adame, Hao Zhang, and Paul Planken. Plasmonic enhancement of photo-acoustic induced reflection changes. 2021. Manuscript accepted for publication in *Applied Optics*.
- [6] Vanessa Verrina, Stephen Edward, Hao Zhang, Alessandro Antoncetti, Stefan Witte, and Paul Planken. Role of scattering by surface roughness in the photoacoustic detection of hidden micro-structures. *Appl. Opt.*, 59(30):9499–9509, Oct 2020.
- [7] Vanessa Verrina, Stephen Edward, Hao Zhang, Stefan Witte, and Paul C. M. Planken. Photoacoustic detection of low duty cycle gratings through optically opaque layers. *Applied Physics Letters*, 117(5):051104, 2020. This paper was selected as an Editor’s Pick.