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, Talk. **January 2019**

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

Nanofabrication

Electron Microscopy

Optical Microscopy

FIB

AFM

Photoacoustics

Pump-Probe technique

Optical setups design

Metrology

Plasmonics

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 Antoncecchi, 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 Antoncecchi, 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 Antoncecchi, Stefan Witte, and Paul Planken. Role of scattering by surface roughness in the photoacoustic detectionof 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.