



# Alessandra Anna Passeri

## EDUCATION AND TRAINING

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- [ 2009 – 2015 ] **High school leaving qualification in science studies**  
*Liceo Scientifico Galileo Galilei*  
**City:** Perugia | **Country:** Italy | | **Final grade:** 100/100 with honors
- [ 2014 – 2018 ] **Bachelor's Degree in Physics (class L-30)**  
*University of Perugia*  
**City:** Perugia | **Country:** Italy | | **Final grade:** 110/110 with honors
- [ 2017 – 2021 ] **Master's Degree in Physics (class LM-17)**  
*University of Perugia*  
**City:** Perugia | **Country:** Italy | **Field(s) of study:** Matter Physics | **Final grade:** 110/110 | **Thesis:** Brillouin Spectroscopy of supported Polymer Thin Films
- [ 10/2021 – Current ] **PhD in Biotechnology**  
*Department of Physics - University of Perugia*

## DIGITAL SKILLS

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### My Digital Skills

Microsoft Office | Adobe Creative Cloud: Acrobat DC, Lightroom, Photoshop | Python Knowledge | Image Processing software (ImageJ)

## LANGUAGE SKILLS

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**Mother tongue(s):** Italian , Spanish

**Other language(s):**

### English

LISTENING B2 READING B2 WRITING B2

SPOKEN PRODUCTION B2 SPOKEN INTERACTION B2

### French

LISTENING B2 READING B2 WRITING B2

SPOKEN PRODUCTION B1 SPOKEN INTERACTION B1

### Spanish

LISTENING C2 READING C2 WRITING C2

SPOKEN PRODUCTION C2 SPOKEN INTERACTION C2

*Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user*

## ORGANISATIONAL SKILLS

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### Organisational skills

- Problem solving
- Analytical
- Team Member

[ 22/06/2014 – 27/06/2014 ] **Summer School in Modern Physics for Outstanding Students**

Organized by *University of Udine (IT)*

The school offered an overview to modern physics topics like Quantum Mechanics, Matter Physics and Superconductivity to high school students. The school included physics classes and seminars from university professors and international researchers and visits to international research centers (Elettra synchrotron and ICTP in Trieste).

[ 29/06/2017 – 02/07/2017 ] **NiPS Summer School 2017 - Energy Harvesting: models and applications**

Gubbio (PG)

Organized by *NIPS laboratory (Physics department of the University of Perugia, IT)*

The focus of the school was on foundations and practical applications of energy harvesting and energy transformations at micro and nanoscales.

[ 08/09/2020 – 10/09/2020 ] **International BioBrillouin2020 meeting - Brillouin Light Scattering  
Microspectroscopy for Biological and Biomedical Research and Applications**

Virtual Meeting

Organized by *University of Exeter (UK)* with the *European Cooperation in Science and Technology*

The conference provided lectures about the latest developments in the field of Brillouin Light Scattering Spectroscopy with focus on Instrument Development and Design, Data Analysis Interpretation, Biomedical and Biological applications.

[ 29/11/2020 – 02/12/2020 ] **Nanoengineering for Mechanobiology 2020** Virtual Meeting

Organized by *James Watt School of Engineering (University of Glasgow, UK), IOM-CNR, EMPA*

International conference that provided lectures about the novel nanotechnology tools and their application to the study of mechanical forces in biological systems.

[ 10/12/2020 ] **Brillouin microscopy & Raman spectroscopy: Emerging techniques for improved  
biomedical and clinical research**

Virtual Meeting

Organized by *University of Exeter (UK) and SelectScience*

Lecture about the use of Brillouin and Raman techniques for life sciences, biomedical, and clinical diagnostic applications.

[ 17/01/2021 – 21/01/2021 ] **International School of Biophysics on "Quantitative analysis of optical imaging for  
Medicine and Biophysics"**

Virtual Meeting

Organized by *SIBPA, CNR, University of Milano Bicocca (IT)*

One-week international school that offered an overview of foundation and application of methods for quantitative data analysis provided by modern optical and multimodal imaging, thanks to extended lectures held by prominent researchers in the field.

[ 10/10/2021 – 11/10/2021 ] **BBM5 Virtual Training School** Virtual Meeting

Organized by Medical University of Vienna, Austria with the European Cooperation in Science and Technology

The training school aim was to familiarize with Brillouin Light Scattering applications in the life sciences and medicine. It consists of some lectures by leading researchers in the field, spanning basic theoretical aspects of what it is possible to measure with BLS, the state-of-the-art in instrumentation and data analysis being used, as well as practical and experimental challenges.

[ 11/10/2021 – 13/10/2021 ] **International BioBrillouin Meeting – BBM5** Virtual Meeting

Organized by Medical University of Vienna, Austria with the European Cooperation in Science and Technology

The conference provided lectures about the latest developments in the field of Brillouin Light Scattering Spectroscopy with focus on 1) Clinical & medical applications of BLS, 2) Novel life-science & phenotyping applications of BLS, 3) Advances in BLS instrument design and data analysis, 4) Correlative (BLS+X) approaches and applications, 5) Fundamental considerations pertaining to interpretation of BLS data.

[ 17/01/2022 – 21/01/2022 ] **Winter School on Biotechnologies 2022** Virtual meeting

The School is made by lectures and open discussions tailored for a broad audience of PhD students and young researchers from university, research centers and industries who are entering the fascinating field of Biotechnology. Topic of the year: Complexity in Biotechnology.

[ 11/09/2022 – 11/09/2022 ] **XXVI National SIBPA Congress** San Miniato (PI) - Italy

Annual conference organized by the Italian Society of Biophysics. Sessions about: Molecular Biophysics, Theoretical and Computational Biophysics, Applied Biophysics and Environmental Biophysics, Nanoscale Biophysics, Cell and Tissue Biophysics.

**Oral contribution:** Mechanical imaging of single cells Investigated by Brillouin microscopy.

[ 14/11/2022 – 17/11/2022 ]

**1st Conference on Brillouin light Scattering for life science and biomedical applications**

University of Lyon - France

Conference dedicated to the discussion of advances in the field of Brillouin Light Scattering Microspectroscopy for Biological and Biomedical Research and Applications. Topics covered include (but are not limited to): Instrument/Technique Development & Design, Data Analysis & Interpretation, Life Science & Biomedical Applications, Complementary & Correlative Studies and Techniques

**Oral contribution:** Mechanical imaging of single cells Investigated by Brillouin microscopy: The influence of Piezo1 on cell stiffness.

[ 23/01/2023 – 26/01/2023 ] **Winter School on Biotechnologies 2023** University of Perugia

The School is made by lectures and open discussions tailored for a broad audience of PhD students and young researchers from universities, research centers and industries who are entering the fascinating field of Biotechnology. Topic of the year: Aging and Biotechnology.

**Oral contribution:** Mechanical imaging of single cells Investigated by Brillouin microscopy.

[ 04/06/2023 – 09/06/2023 ] **FEBS 2023 Advanced Course** University of Glasgow - Scotland

***Mechanics in Biology: from molecules to cells and tissues***

The school explored techniques to investigate mechanobiological processes from single molecules to tissues and constituent cells (Single molecule force spectroscopy, Atomic force microscopy, Traction force microscopy, Fluorescence lifetime Imaging microscopy). Specifically, the following techniques were covered with hands-on practical sessions, and backed up by lectures delivered by world-leading experts in the field

**Poster:** The influence of Piezo1 on Cell Mechanics investigated by correlative Brillouin and Raman Microscopy

[ 12/06/2023 – 16/06/2023 ]

**International Summer School and Conference on Vibrational Spectroscopy (VISPEC) 2023**

University of Perugia

The VISPEC school included lessons and practical exercises to introduce to the many aspects of predicting and investigating the structure and dynamics of materials. The VISPEC conference included keynote presentations and research on the different applications of vibrational spectroscopy: from biotechnology to cultural heritage, from photonics to pharmaceuticals.

**Oral Presentation:** The influence of Piezo1 on Cell Mechanics investigated by correlative Brillouin and Raman Microscopy

[ 06/12/2023 – 08/12/2023 ] **BioBrillouin 2023** Trinity College Dublin - Ireland

Conference dedicated to the discussion of advances in the field of Brillouin Light Scattering Microspectroscopy for Biological and Biomedical Research and Applications. Topics covered include: Instrument/Technique Development & Design, Data Analysis & Interpretation, Life Science & Biomedical Applications, Complementary & Correlative Studies and Techniques.

**Oral Presentation:** Fixation effects on viscoelastic properties of cells

[ 27/05/2024 – 30/05/2024 ] **Spring School on Biotechnologies 2024** University of Perugia

The school is designed to be a meeting point between industry experts and a diverse audience composed of PhD students, as well as young and senior scientists from universities and research centers. The goal is to deepen the development, application, and use of biomaterials and biodevices, providing a unique opportunity for learning and knowledge exchange.

**Oral Presentation:** Brillouin Spectroscopy for the micromechanical characterization of cells and tissues.

[ 16/06/2024 – 20/06/2024 ] **XXVII National SIBPA Congress 2024** University of Genova

Conference organized by the Italian Society of Biophysics. Congress focused on the latest developments in biophysics, covering topics such as molecular biophysics, computational biology, and biophysical techniques.

**Poster:** Correlative Raman-Brillouin Spectroscopy: Investigating Fixation Effects on Cells

## HONOURS AND AWARDS

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[ 13/10/2021 ] **Best Poster Award Awarding institution:** International BioBrillouin Meeting – BBM5

Poster Title: Brillouin Spectroscopy of supported Polymer Thin Films)

[ 20/06/2024 ] **Best Poster Award Awarding institution:** XXVII National SIBPA Congress 2024

Poster title: Correlative Raman-Brillouin Spectroscopy: Investigating Fixation Effects on Cells

## PUBLICATIONS

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[ 2022 ] [Non-contact elastography methods in mechanobiology: a point of view](#)

Caponi S., Passeri A.A., Capponi G., Fioretto D., Vassalli M., Mattarelli M., *European Biophysics Journal* **51**, 99–104

[ 2022 ] [Disentanglement of Multiple Scattering Contribution in Brillouin Microscopy](#)

Mattarelli M., Capponi G., Passeri A.A., Fioretto D., Caponi S., *ACS Photonics* **2022, 9, 6, 2087–2091**

[ 2023 ] [Size and environment: the effect of phonon localization on Micro-Brillouin imaging](#)

A.A. Passeri, A. Di Michele, I. Neri F. Cottone, D. Fioretto, M. Mattarelli, S. Caponi, *Biomaterials Advances*, Volume **147**, 213341,

[ 2024 ] [Brillouin Spectroscopy for Accurate Assessment of Morphological and Mechanical Characteristics in Micro-Structured Samples](#)

Passeri A. A., Argentati C., Morena F., Bonacci F., Neri I., Fioretto D., Vassalli M., Martino S. Mattarelli M., Caponi S., *Journal of Physics: Photonics* **6**, 035016