

# Laura Pilotto

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## Current position

11/2024-present

### University of Udine – Postdoc position

Supervisors: Prof. Luca Marchiol

Research topic: Use of nano-hydroxyapatite derived from natural waste materials, combined with urea, to improve the efficiency of nitrogen and phosphorus (N-P) fertilization

## Education

2021 – 2024

### Ph.D. Student in Environmental Life Sciences

Universities of Trieste and Udine, Italy

SSD: Scienze agrarie e veterinarie - AGR/02 "Agronomia e coltivazioni erbacee"

Supervisor: Prof. Guido Fellet

Co-Supervisor: Prof. Luca Marchiol

Research topic: Use of nano-hydroxyapatite from natural wastes as a novel type of P-fertilizer.

Degree awarded on April 16, 2025

2017 – 2021

### Master's degree in Environmental Sciences and Technologies

University of Udine, Italy

Thesis: *Effects of Cerium Oxide Nanoparticles on the Abundance of Main Soil's Microbiological Groups.*

Supervisor: Prof. Luca Marchiol

Co-supervisor: Prof. Marcello Civilini

2013 – 2017

### Bachelor's degree in Environmental and Natural Sciences

University of Udine, Italy

Thesis: *Carbon Dioxide Monitoring for Microbial Growth Evaluation.*

Supervisor: Prof. Marcello Civilini

2008 – 2013

### Diploma of Scientific High School

Liceo Scientifico Statale "M. Grigoletti", Pordenone, Italy

## Visiting periods

11/2023 – 03/2024

### The Connecticut Agricultural Experiment Station - USA

Supervisors: Dr. Christian Dimpka, Dr. Jason White

Activities: research on the application of nano-hydroxyapatite and potassium-doped-nano-hydroxyapatite synthesized from chicken bones in tomato plant-soil systems.

06/2022

### CNR Nanotec Lecce - Italy

Supervisor: Dr. Clara Piccirillo

Research activities:

- Nano-hydroxyapatite synthesis from biological waste and its characterization.
- Doping of nano-hydroxyapatite with urea

## Research experiences

05/2021-10/2021

### University of Udine - Postgraduate Scholarship

Supervisors: Prof. Luca Marchiol and Prof. Guido Fellet

Research on the establishment of native plant species on mining tailings.

07/2020-09/2020

### University of Udine - Curricular Internship

Supervisor: Prof. Marcello Civilini

Training in an Environmental Microbiology Laboratory. Research project: "Use of ozone to disinfect surfaces".

01/2017-05/2017

### University of Udine - Curricular Internship

Supervisor: Prof. Marcello Civilini

Basic training in an Environmental Microbiology Laboratory.

## Publications

Buurma E.E., Vaidya S.R., Pilotto L., Dimkpa C.O., White J. C., Fellet G., Fairbrother D.H. "Differential Effects of Biodegradable Polymers and Polymer-Phosphorus Composites on Tomato Performance and Phosphorus Uptake" 2025. *Journ. Of Agric. Sci. and Techn.* 5(8), 1709–1721.

Pilotto L., Scalera F., Piccirillo C., Marchiol L., Alzate Zuluaga M., Pii Y., Cesco S., Civilini M., Fellet G. "Phosphorus Release from Nano-Hydroxyapatite Derived from Biowastes in the Presence of Phosphate-Solubilizing Bacteria: A Soil Column Experiment". 2025. *Journ. of Agric. and Food Chemistry.* 73 (7), 3918–3929.

Fellet G., Mauri M., Contin M., Casolo V., Pilotto L., Marchiol L. "Potentially toxic elements in facultative metallophytes *Biscutella laevigata* and *Silene vulgaris* along the stream descending from the abandoned Raibl mine (Italy)". 2025. *International Journal of Phytoremediation.* 27(8), 1091–1099.

Pilotto L., Alzate Zuluaga M., Scalera F., Piccirillo C., Marchiol L., Civilini M., Pii Y., Cesco S., Fellet G. "Sustainable crop fertilization by combining natural nano-hydroxyapatite and P solubilizing bacteria: preliminary observation on barley". 2024. *Plant Nano Biology*, 9, 100091.

Marchiol L., Pilotto L., Lizzi D., Fellet G. Book chapter: "Uptake, Transformation, Molecular and Physiological Responses" (pp. 83–118). Cyren M. Rico. 2022. in *Plant Exposure to Engineered Nanoparticles*, Elsevier.

Gigli M., Fellet G., Pilotto L., Sgarzi M., Marchiol L., Crestini, C. "Lignin-based nano-enabled agriculture: A mini-review". 2022. *Frontiers in Plant Science*, 13, 976410.

Fellet G., Pilotto L., Marchiol L., Braidot, E. "Tools for nano-enabled agriculture: fertilizers based on calcium phosphate, silicon, and chitosan nanostructures". 2021. *Agronomy*, 11(6), 1239.

## Congress, poster, and presentation

11/09/2024-13/09/2024

**53° Convegno della Società Italiana di Agronomia, Matera, Italy**

Poster presentations:

- *Optimizing Nutrient Management with Nanofertilizers: A Run-Off Experiment in a Model System.*

09/09/2024

**Nanoinnovation 2024, Rome, Italy**

30/06/2024-03/07/2024

**IBIC, Bologna, Italy**

Oral presentation: *Smart-delivery systems in Nano-Enabled Agriculture. The current state-of-the-art on nanohydroxyapatite*

26/06/2024-27/06/2024

**AISSA Under 40, Florence, Italy**

Oral presentation: *Sustainable Fertilization: First Evidence into the Combined Use of Natural Nano-Hydroxyapatite and P-Solubilizing Bacteria in Hordeum vulgare.*

19/09/2023-21/09/2023

**Nanoinnovation 2023, Rome, Italy**

Oral presentation: *Nano-hydroxyapatite from organic waste for sustainable P-fertilization.*

25/09/2023-27/09/2023

**52° Convegno della Società Italiana di Agronomia, Portici, Italy**

Poster presentations:

- *Nano-hydroxyapatite from Wastes: Synthesis and P Release Evaluation Through A Soil Column Compared to TSP.*
- *Nano-Enabled Agriculture and Circular Economy. Nature-Derived Materials as Smart-Delivery Systems.*

19/09/2021-23/09/2021

**Nanoinnovation 2021, Rome, Italy**

15/09/2021-17/09/2023

**50° Convegno della Società Italiana di Agronomia, Udine, Italy**

## Ph.D. schools and courses attended

19/09/2024-20/09/2024

**3rd Summer School "Nanotechnology in Agriculture"**

Politecnico di Torino

06/2024

**Imaging with ImageJ**

Lecturer: Dr. Marco Vuerich

University of Udine

29/06/2023-30/06/2023

**2nd Summer School "Nanotechnology in Agriculture"**

University of Udine

03/2023

**Advanced geomatics**

Lecturer: Dr. Antonio Tomao

University of Udine

06/02/2023 – 09/02/2023

**Agricultural Chemistry Winter School 2023 "Stresses" at the Rhizosphere: The Role of Agricultural Chemistry in Solving Challenges Occurring in the Plant-Soil System**

University of Udine

09/2022

**Principles of environmental sensors**

Lecturers: Prof. Giorgio Alberti, Prof. Alessandro Peressotti

University of Udine

07/2022

**Introduction to applied Statistics with R and RStudio**

Lecturer: Prof. Giovanni Bacaro

University of Trieste

30/06/2022 – 01/07/2022

**1st Summer School "Nanotechnology in Agriculture"**

University of Viterbo

14/02/2022 – 17/02/2022

**Agricultural Chemistry Winter School 2023 "Novel Approaches And Technologies For Current And Future Challenges In Agricultural Chemistry"**

University of Udine

## Teaching activities

### Lectures

2022

Lecturer of the topic "Nanotechnologies in agriculture" in the course "Ecology of ecosystems and environmental monitoring" at the University of Udine, teaching language: Italian, 2 hours (Course holder: Prof. Luca Marchiol).

2024

Lecturer of the topic "Nanotechnologies in agriculture" in the course "Ecology of ecosystems and environmental monitoring" at the University of Udine, teaching language: Italian, 2 hours (Course holder: Prof. Luca Marchiol).

Lecturer of the topic "Nanotechnologies in agriculture" in the course "Agronomy" at the University of Udine, teaching language: Italian, 2 hours (Course holder: Prof. Guido Fellet).

Lecturer of the topic "Fertilizer potential of nanohydroxyapatite" in the 3<sup>rd</sup> Summer School «Nanotechnology in Agriculture», Politecnico di Torino, 19-20 September 2024. Teaching language: English.

## **Thesis**

Co-supervisor of six theses.

## **Languages**

Italian: mother tongue

English: B2

## **Other activities**

2023

**Participation in the organizing committee of the 2nd Summer School  
"Nanotechnology in Agriculture"**

University of Udine

Dichiaro che tutti i fatti e gli stati indicati sono da ritenersi dichiarati ai sensi e per gli effetti degli articoli 46 e 47 del DPR 445/2000.

Autorizzo il trattamento dei miei dati personali ai sensi del Decreto Legislativo 30 giugno 2003, n. 196 "Codice in materia di protezione dei dati personali".

Udine, 19/10/2025