



**VIU**  
**PhD**  
**academy**  
**PLASTIC**  
**POLLUTION**  
**and BIOPLASTIC**  
**materials**

**Plastic Pollution and Bioplastic Materials**

**September 27 – October 1, 2021**

**Venice International University**  
**Isola di San Servolo, Venice**

VIU International PhD  
Academy

## Plastic Pollution and Bioplastic Materials

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University

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Scientific Coordinator:

Emanuela Gatto  
Tor Vergata University of  
Rome

This program is a VIU Global  
Challenges Initiative

Plastics are an important material in our economy, and modern daily life is unthinkable without them. The production of new plastic products since the Second World War revolutionized in a positive way all fields of human activities: medicine, aerospace, transport, health and everyday life. At the same time, however, plastic materials can have serious downsides for the environment and health. The problem is that the conveniences that plastic offers, led to a throw-away culture and revealed the material's dark side: many of these products, which are used only for a few minutes, may persist in the environment for hundreds of years. Today, single-use plastics account for 40 percent of the plastic produced every year. Half of all plastics ever manufactured have been made in the last 15 years. Production increased exponentially, from 2.3 million tons in 1950 to 448 million tons by 2018. Production is expected to double by 2050. Within these values, every year, about 8 million tons of plastic waste escapes into the oceans from coastal nations and this has generated many plastic islands. All marine animals are negatively impacted by plastic pollution, because they eat it and they remain trapped in plastic bags and other objects. Furthermore, plastics often contain additives to make them stronger, more flexible, and durable, but this led to a material which needs many (from one hundred to a thousand) years to degrade and which degrades releasing micro-plastic to the environment.

The goal of this PhD Academy is to facilitate learning, discussion, and the exchange of ideas to address the challenging issues in Plastic Pollution and on how science is working trying to solve this problem.

This PhD Academy will be led by:

- Tor Vergata University of Rome, Italy
- University of Padova, Italy
- Tel Aviv University, Israel

### Faculty

Emanuela Gatto, Tor Vergata University of Rome  
Silvia Licoccia, Tor Vergata University of Rome  
Luisa Campagnolo, Tor Vergata University of Rome

Mariano Venanzi, Tor Vergata University of Rome  
Giordano Ferrari, Contamination Hub, Tor Vergata University of Rome  
Michele Modesti, University of Padova

Lorenzetti Alessandra, University of Padova  
Alessandro Manzardo, University of Padova  
Alexander Golberg, Tel Aviv University

## Topics

### Plastic Materials

- General overview: plastic, synthesis, properties and applications.
- Pollution due to plastic materials, politics and related laws.
- Health problems due to plastic degradation

### State of the art of plastic recycling

- Advanced methods of selection and characterization of plastics
- Chemical, physical and engineering processes in plastic recycling.

### Recent advances in synthesis and characterization of new bioplastic materials and their applications

- Bioplastic: definition and numbers.
- Bioplastic from natural biopolymers: synthesis, characterization and properties
- Bioplastic from bacterial fermentation

### Life cycle assessment

- Life cycle assessment and footprinting for the sustainable management of plastics

### Laboratories

- Sampling and analysis of real samples
- Synthesis of bioplastic materials

### Development of Transversal skills

Science communication, presentation skills, management skills, networking skills, start-ups and spin-offs.

## Learning outcomes

After attending this PhD Academy, participants will be familiar with:

- plastic challenges facing humanity
- plastic recycling
- bioplastic
- interdisciplinary approaches to complex problems
- enabling knowledge exchange
- working in group settings
- debating and targeting consensus
- transforming a research idea into business (start-ups and spin-offs)
- the value of networking

Equipped with this knowledge, participants will become ambassadors and defenders of technologies for sustainable development in their environment.

## Methodology

Seminars, oral and poster presentations, transversal skills trainings, laboratories are among the activities of the Academy. Students will present their research in poster sessions.

## Who can apply?

This PhD Academy is offered to PhD students, Post-doc and young researchers in Natural sciences & Technology or any other discipline related to Material Science.

This PhD Academy is a postponed Spring 2021 activity. Applications are currently closed, however, should any places become available, a new call for applications will be opened. [Updated information will be available on the dedicated webpage.](#)

## Fees & Grant Support

Students from the VIU member universities will pay no participation fees. Grant support is also available to support, partially or fully, the costs of international travel and accommodation.

The participation fee for students of non-member universities is Euro 1,100 incl. VAT. The fee is inclusive of tuition, course materials, accommodation, lunches, social events and taxes. Students from non-member universities are not eligible for VIU grant support. VIU Alumni are eligible for a reduced fee.

Selected participants will be asked to present a poster.

For further information: [phdacademy@univiu.org](mailto:phdacademy@univiu.org)

*As the COVID-19 pandemic is ongoing, VIU will continue to monitor the situation, and in the event that it is not possible to confirm the program on the VIU campus as scheduled, other practicable solutions will be evaluated. Applicants and confirmed participants will be informed of any changes.*

### **VIU International PhD Academies**

Venice International University is a consortium of 20 universities, representing 15 countries throughout the world.

The mission of VIU is to foster cooperation among VIU member institutions while facilitating the exchange of knowledge and ideas, by developing, promoting and organizing joint academic, research and training/capacity-building program. Students from non-member universities may participate in selected academic programs.

The academic programs at VIU are distinguished by a markedly interdisciplinary approach to the topics, and by the international perspectives that the participants contribute to the discussions. The VIU campus is on the island of San Servolo in Venice, Italy.

Venice International University holds two International PhD Academies each year. They are intensive training opportunities open to PhD candidates from the member universities of VIU. A PhD is the highest diploma awarded by universities in the world, and PhDs are naturally expected to take on major responsibilities in their professional life. Apart from the disciplinary scientific skills acquired during doctoral study and research, it is the ability to respond to the requirements of creativity, innovation and project management, that produce the significant added value of a doctoral degree.

Whether they will work within or outside academia, PhDs must be able to develop a forward-looking vision of the challenges they have to face. The interdisciplinary approach of all VIU activities is adopted also in the PhD Academy, where the participants have the opportunity to meet their peers from all over the world, and to tackle transversal topics.

[www.univiu.org/study/phd-academy](http://www.univiu.org/study/phd-academy)

### **Location**



### **Venice International University**

Isola di San Servolo  
30133 Venice  
Italy

T +39 041 2719511

F +39 041 2719510

E [phdacademy@univiu.org](mailto:phdacademy@univiu.org)

[www.univiu.org](http://www.univiu.org)