**Go East Summer School** 

### DAAD





**Ready** to experience a summer of learning and amazing social activities in the wonderful city of Novi Sad, Serbia? Bundesministerium für Bildung und Forschung



Deutscher Akademischer Austauschdienst German Academic Exchange Service

#### Innovative materials for sustainable future

Enter in the amazing world of plastics and face with one of the biggest challenges nowadays:

#### HOW TO DEVELOP THE NEXT GENERATION OF SUSTAINABLE PLASTICS AND SAVE THE PLANET!



Department of Materials Engineering Faculty of Technology Novi Sad Boulevard cara Lazara 1, 21101 Novi Sad, Serbia

### Novi Sad

- The second large city in Serbia,
- The capital of the Municipal of
- Vojvodina,
- European capital of culture 2022
- A city of young people and the University of Novi Sad with 50.000 students situated at the campus on the river Danube,
- A city of the famous musical EXIT festival



What to see in Novi Sad watch it on YouTube

shorturl.at/iyRSZ



Danube in Serbia: teaser 1&2 watch it on YouTube

> shorturl.at/bjrAK shorturl.at/ipBWY

### Vojvodina

is the region where different international companies operate, and the Department of Materials Engineering has good collaboration with most of them, so the idea is to select one for the whole day visit. One day is foreseen for the one-day excursion around Vojvodina, where students should learn about the great history of Vojvodina and meet the multicultural and multinational environment, folklore, and tradition of Vojvodina's inhabitants.



Serbia: The Place To Be watch it on YouTube

shorturl.at/absLT

# SERBIA

#### **MATERIALS CHALLENGES**

One of the definitions says that materials are "the matter that people process in order to obtain a product." Materials are part of everyday life; the most basic division is into metals, ceramics, glass, plastic, and composites.

It is well known that historical eras are named according to the development of materials, such as the Stone Age, Iron Age, Golden Age, Copper Age, etc.

The 20th century was the century of the plastic revolution that changed our world. Plastics are part of the mobile phones, computers, fast cars, implants, satellites etc. (fig 1 and 2)

#### WHAT IS THE SECRET OF THESE MATERIALS?

The secret is hidden in the combination of their structure and unique properties.

Plastics are light and easily formed into the desired shapes with technologies that do not consume vast amounts of energy and have low costs. However, plastics have only one property that, in addition to their advantages, also represents a disadvantage, they are long-lasting (permanent), and they need time to decompose.

Unfortunately, in the 20th century, not enough importance was attached to this property, and nowadays, we have plastics in landfills and seas. But the most important thing is, that there is a solution, and now in the 21st century, we have to face these challenges.

Within the framework of summer school, we will deal with one of the biggest challenges of today:

#### HOW TO DEVELOP THE NEXT GENERATION OF SUSTAINABLE PLASTICS AND SAVE THE PLANET!

### About summer school:

Lectures and lab work are oriented to the newest strategies, laws, and regulations about polymeric materials usage and end-of-life strategies. The summer school is intended to last 12 days, and the outcome of the summer school and the proposed program should be the introduction of biopolymers and their potential application in different fields, as well as an understanding of the basic principles of different processing technologies.

The school is divided into two sections: lectures and lab work on the lab, pilot, or industrial machines available at the Faculty of Technology Novi Sad. Lectures will cover different topics, and lab work will follow the thematic units presented. First, two days of lectures are foreseen to give a detailed introduction to strategies, laws, and regulations at the EU level in terms of the circular economy. Sustainability, to cover the newest standards for different applications of plastic materials (i.e., packaging, automotive), to present the problem of microplastic pollution and different end-of-life strategies for plastic materials. There will be a short introduction about LCA/LCCA, the significance of estimation of LCA of some plastic items, and how it can affect decision-making in production. The

lectures about different types of available biopolymers and routes for production will follow, so students will have a comprehensive overview and an excellent basis to understand the rest of the lectures.

Three processing technologies will be covered during the summer school: traditional extrusion and injection moulding, and novel, advanced technology: electrospinning. Lectures and lab work will be consecutive, so one day, the theoretical introduction and principles of processing technology will be given, and on another day, the lab work will be done, together with the necessary characterization of prepared samples (mechanical, thermal, and physicochemical).

During the last days of summer school, the basic principles of green chemistry in polymer synthesis and processing will be covered; students should learn about the newest regulations regarding chemicals usage and disposal and new ways of extraction and synthesis of biopolymers and their products.

On the last day, the students will have a case study competition on problem-solving or solution proposition, where they will be divided into teams to get to know teamwork and soft skills.

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tion, where they will be divided into teams to get to know teamwork and soft skills.

**Afternoons** are usually for **free activities of students**, together with local students who will also participate in this summer school. This should bridge German and Serbian students and create a network of contacts for both, which can be helpful in future education and career.

### Who?

This summer school is dedicated to undergraduate students interested in materials engineering, familiar with or interested in learning about the circular economy of plastic materials and new trends in the field.

#### When?

10 – 21 July 2023.

### Where?

Faculty of Technology Novi Sad Bulevar cara Lazara 1, Novi Sad, Serbia



#### **How to Apply:**

Candidates need to submit their applications by **10<sup>th</sup> May 2023.** to <u>goeast2023@gmail.com</u> (contact person: Branka Pilić, PhD, full professor, Summer School coordinator, Mobile phone: +381 63 537 232) Please specify "DAAD Go EAST Summer School – application" in the email subject line.

#### The following documents should be submitted as part of application:

• Filling the Questionnaire

**ECTS load:** 

**3 ECTS** 

The summer school lasts for

12 days and of

lectures/lab work/case study

and presentations.

Certificate of Attendance

- Curriculum Vitae.
- Motivation letter

Fill the Questionnaire

shorturl.at/ruPR1









Faculty of Tehnology watch it on YouTube

shorturl.at/sOQS2

#### The Summer school fee: 450 EUR (paying in cash upon arrival at the Faculty)

DAAD Scholarships to cover transportation and accommodation expenses is available for 15 German students currently enrolled in German universities. Interested candidates are required to apply both to the Faculty of Technology Novi Sad for admission to a summer school and the DAAD for a scholarship acquirement at the same time. The deadline for the application for the DAAD scholarship is **25<sup>th</sup> April** 

## We are looking forward to welcoming you in Novi Sad, Serbia this summer!

#### **PRELIMINARY PROGRAM:**

Dates	Morning	Afternoon	Social Activities
10.07. Monday	Arrivals, accommodation, free time	14:00 – 17:00 Summer school opening, introduction to the Faculty of Technology, presentation of the organization team and participants, discussion about organizations	Welcome dinner informal getting to know each other
11.07. Tuesday	9:00 – 12:30 <b>Lectures:</b> Circular Economy versus Linear Plastics Material Challenges – sustainability, end-of life strategies, microplastics	13:30 – 17:00 <b>Lectures:</b> Structure and properties of polymer materials	Novi Sad City Tour
12.07. Wednesday	9:00 – 12:30 <b>Lectures:</b> Biopolymers – synthetic and microbiological polymers, synthesis, and application	13:30 – 17:00 <b>Caffe</b> – Plastic application as innovative materials for advanced technologies Case study	Museum/gallery visit
13.07. Thursday	9:00 – 12:30 <b>Lecture:</b> Processing technologies – extrusion	13:30 – 17:00 <b>Lab work:</b> Extrusion – preparing of samples and characterization	Free time
14.07. Friday	Factory visit – NORMA Subotica – automotive	part processing	
15.07. Saturday	Excursion - Along the paths of historical event	s of Danube myths and legends	
16. 07. Sunday	Free day		
17.07. Monday	9:00 – 12:30 <b>Lectures:</b> Processing technologies – injection moulding	13:30 – 17:00 <b>Lab work:</b> Injection moulding – preparing of samples and characterization	Free time
18.07. Tuesday	9:00 – 12:30 <b>Lectures:</b> Processing technologies – electrospinning	13:30 – 17:00 <b>Lab work:</b> Electrospinning – preparing of samples and characterization	Novi Sad from different angle
19.07. Wednesday	9:00 – 12:30 Case study group work	13:30 – 17:00 Case study group work	Sremski Karlovci adventure for young people
20.07. Thursday	9:00 – 12:30 <b>Lectures:</b> Green chemistry in polymer synthesis	13:30 – 17:00 Lab work: Green chemistry	Free time
21.07. Friday	9:00 – 12:30 Case study presentation	13:30 – 17:00 Case study presentations	Goodbye dinner