

**The 50th International Symposium on Novelties in Textiles**, held under the title *Crossing Boundaries*, took place from 29 to 30 May 2025 in Ljubljana, Slovenia.

Organised as a platform for knowledge exchange and innovation by the Faculty of Natural Sciences and Engineering, jointly by the Department of Textile and Clothing Engineering and the Department of Graphic Arts, the symposium brought together researchers, industry professionals, and educators with an aim to explore emerging trends, sustainable practices, and technological advancements in the field of textiles and graphic arts.

Even though the keynote lectures were held jointly for all Symposium participants, after the morning sessions, the participants split into two groups: one focused on Textiles and the other on Graphics.

### **SUMMARY OF DAY 1 – SUSTAINABILITY, INNOVATION, AND MATERIAL RESEARCH**

The first day of the *50th International Symposium on Novelties in Textiles – Crossing Boundaries* opened with two keynote lectures that set a silver lining for the event's thematic focus on sustainability, without disregard to the social context.

Dr. Iva Jestratijevic (University of North Texas, USA) presented a case study on implementing a zero-waste textile model through hands-on pedagogy and action research on the textile sustainability topics. Her lecture emphasised education as a fundamental driver and a stepping stone for systemic change within the textile industry. By implementing knowledge not only theoretically, but also practically, students and pupils can develop a deeper understanding of the depth of textile sustainability.

Following this, dr. Dan Podjed (ZRC SAZU, University of Ljubljana) delivered a thought-provoking lecture titled *Living in a Container*, reflecting on human behaviour and lifestyle through the metaphor of confined spaces, broadening the symposium's scope beyond materials into cultural and societal dimensions. By offering real-life examples of containers placed as emergency solution in the devastated area of Petrinja, Croatia, he provoked the audience to think about the meaning, worth of containers in the social context, provoking an afterthought that individuals in today's society also often find themselves in their own "mind and perspective" container, and to connect, we have to stay open, accepting and move those "container" boundaries.

During the session, which followed the morning keynote lectures, we had an insight into cutting-edge material innovations, including developments in the new European silk project, potential applications for a novel, bio-based material - bacterial cellulose, and a look into experimental approaches to vegan leather using apple waste. Research on functionalizing polypropylene nonwoven materials with nanotechnology underlined the integration of advanced chemistry in textile development. This session was chaired and moderated by dr. Torsten Textor and dr. Brigita Tomšič

The afternoon sessions, chaired by dr. Maja Radetić and dr. Petra Forte Tavčer continued the textile materials theme and leaned more into the textile chemistry, showcasing multifunctional TiO<sub>2</sub>-based coatings and improvements in cotton hydrophilicity and dyeing techniques. A notable highlight included the examination of how fabric surface properties affect electrical resistance, linking physical textile traits with functional performance.

Later sessions, led by dr. Matejka Bizjak and dr. Živa Zupin shifted focus toward digitalisation and education in textile and garment production. Topics included presentation of a computerised weave design with additional features, using the Slovenian weaving program Arahne, and a showcase of a pilot project developing a database for textile production processes. This was followed a presentation of a project focused on the service learning in sustainable textile education. The day concluded with a project presentation on addressing skill gaps in Europe's textile, clothing, leather and footwear sectors, returning the conversation to education and workforce development.

## **SUMMARY OF DAY 2 – INDUSTRY APPLICATIONS, ETHICAL INNOVATION, AND FASHION FUTURES**

Day 2 opened with a keynote from a leader in advanced aerospace technologies, a Slovenian company Pipistrel. Presentation held by Ingrid Heuffel Berginc, *Innovating the Skies*, explored how textiles, advanced materials, and 3D techniques contribute to next-generation aviation solutions. This keynote showcased how the disciplines of high-performance engineering and textile innovation are bridged in everyday life.

The program then transitioned to industry-focused talks, beginning with Petra Kovačič from BETI, who detailed the company's evolution from a traditional labour-intensive operation to an innovation-driven textile company, highlighting current efforts to transition towards more sustainable operations and products with a high innovation impact. This was followed by a presentation on the creative and ethical material explorations of fashion designer Tina Gorjanc, illustrating the intersection of biomaterials, sustainability and ethics in a social context.

The final session, chaired by Petja Zorec, explored contemporary themes in fashion practice and education. Presentations addressed sustainability in the Slovenian fashion landscape and how Slovenia has an opportunity to start being a Fashion Hub, we also observed how consumer behaviour changes (covid19) affects fashion trends like “city to beach” styling, and the role of collaboration in digital fashion learning environments.

## **CONCLUSION**

Over two days, the symposium successfully “crossed boundaries” between disciplines, industries, and educational paradigms. From theoretical and pedagogical frameworks to practical material applications and industry case studies, and a deep dive into the chemical aspect of textiles, the event highlighted the multifaceted nature of textile innovation and its critical role in shaping a more sustainable and connected future.

