



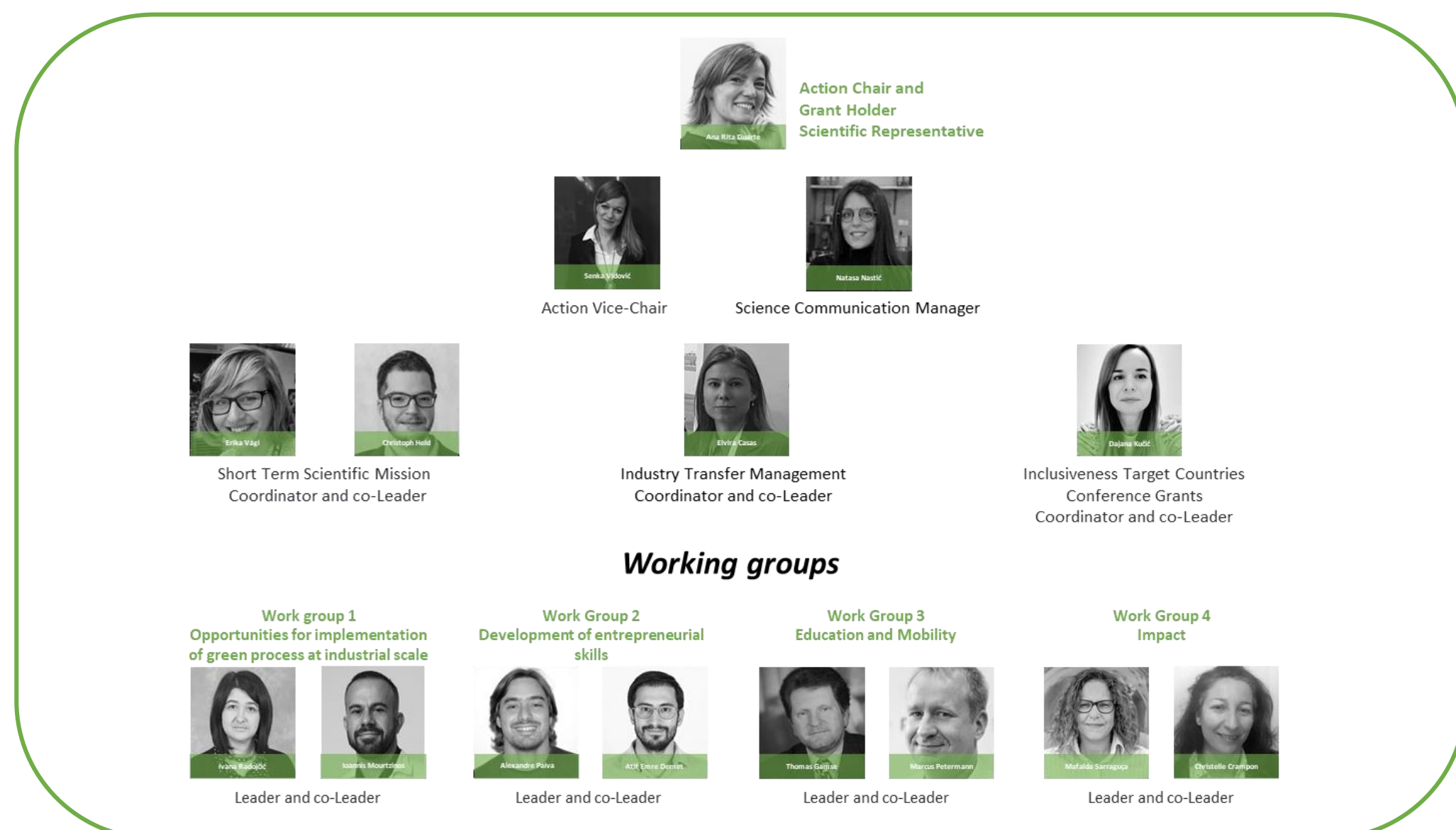
# CA18224 COST ACTION GREENERING

## Green Chemical Engineering Network towards upscaling sustainable processes

<https://www.greenering.eu/>

Cost Action GREENERING has the objective to promote and boost the industrial application of green chemistry and sustainable technologies, developing the tools for the scale-up and implementation of emerging processes in the industry. GREENERING consists of conferences, seminars, summer schools, practical courses mentoring towards funding and commercialization, student/researcher mobility, facilitating the creation of new start-up companies and reinforced implementation of green technologies at the industrial level.

### Presentation of the team



**More than 200 participants  
from 36 countries  
(including 19 ITC countries)  
14 industries are involved**



### Activities implemented by the action

Dissemination

Training

#### International Greenering Conferences

CA Greenering organized international scientific conferences to promote the last innovations in green chemistry:

- **International Greenering Conferences** in February 2021 and March 2023  
Academic researchers recognized in their fields and industrials were invited:



Both conferences gathered participants from research academia and industry who could share their knowledge and ideas around themes connected to green chemistry: *Alternative solvents, Biorefinery, CO<sub>2</sub> capture and Utilization, Green reactions and catalysis, Polymers and advanced materials, Care health, Food and agriculture technology, Scale-up...*

- **Meetings** joint to Encuentro Ibérico de Fluidos Supercríticos in February 2020 and March 2022

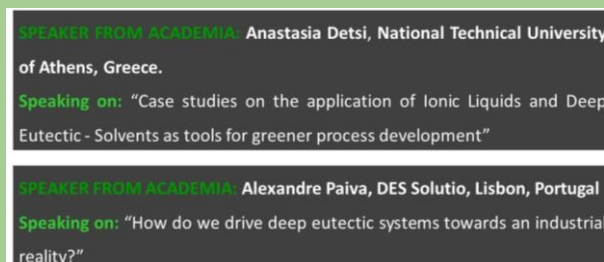
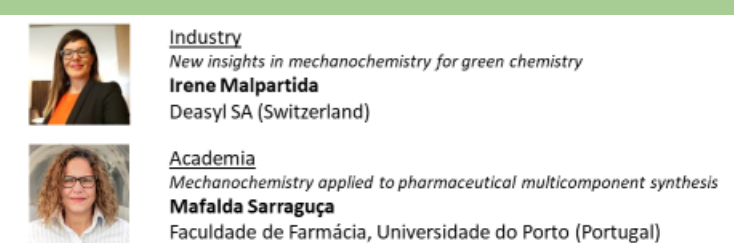
#### Success stories



Alexandre Barros from the company Hydruimedical (Portugal) initiated the webinar series "Greenering success stories". It consisted of an interested exchange of short questions and answers chaired by Alexandre Paiva (Des Solutio – Portugal). Alexandre Barros presented Hydruimedical products, how green chemistry (through the use of supercritical CO<sub>2</sub>) is integrated in Hydruimedical processes, how he managed to transpose a green process from laboratory to industrial scale, difficulties encountered but also successes.

#### When Industry meets Academia

Webinars "When Industry meets Academia" have already been organized. CA Greenering participants could learn about Mechanochemistry, Deep eutectic solvent applications, and Production of Ammonia from academic and industrial point of view.



#### Collaborations and articles



The several events organized by CA Greenering give the opportunity to researchers from different laboratories to respond to research calls to collaborate and some joint scientific publications begin to emerge.

**Towards Next-Generation Sustainable Composites Made of Recycled Rubber, Cenospheres, and Biobinder**  
by Kristine Irtiseva<sup>1</sup>, Vjaceslavs Lapkovskis<sup>2</sup>, Viktors Mironovs<sup>2</sup>, Juris Ozolins<sup>1</sup>, Vijay Kumar Thakur<sup>3</sup>, Gaurav Goel<sup>4</sup>, Janis Baronins<sup>5</sup> and Andrei Shishkin<sup>1,5</sup>

An article on GREENERING COST Action (CA 18224) is available in the European Energy Innovation Magazine: <https://www.europeanenergyinnovation.eu/OnlinePublication/Spring2022/index.html?fbclid=IwAR0OFnJdRHZC7cy0ve3wFmHFSTfAgC0ivUPcpsSpPUCvDXfJwcB-xCYUXFA#p=46>

#### Technical days "Bubbles"

The Faculty of Technology Novi Sad (Serbia) and the Faculty of Food Technology and Biotechnology Zagreb (Croatia) organized the first Greenering Bubbles. The topic of those three-day training school was the application of green technologies and green solvents in plant processing and extract production. Representatives from 9 companies participated: *Euro Prima, Vitalon, Deverra Farm, Suncokret Granum, Sapunateka, Imortela, Nikel, Bio et naturalis and Adena Natura.*



#### Entrepreneurship courses



Two entrepreneurship courses were held in November 2021 and September 2022. They were one-week courses about Process of Innovation Development; Idea Generation Techniques; Business Model CANVAS methods and Elevator Pitch; Understanding Financial Statements; Cash Flow Forecasts and Economic Evaluation. About 20 PhD students and researchers were gathered to gain knowledge and develop skills in technology transfer into the market.



#### Summer and training schools



The Green Engineering by High Pressure Technology training course was held in July 2022 in Maribor (Slovenia). The GEHPT 2022 course welcomed in presence PhD and Master students. All participants gave an oral presentation and the abstracts of these presentations were peer-reviewed by the European Federation of Chemical Engineering Working Party members.

The Green Techno School was held in February 2023 in Graz (Austria). PhD and Master degree students could follow courses about: Green Processing, Supercritical Fluid applications, CO<sub>2</sub> capture and utilization, Valorization of wastes, H<sub>2</sub> production, ...

The next training courses are planned in July 2023.

#### STSM and ITC grants



CA Greenering gives the opportunity to young researchers to go and work with researchers from Europe through scientific short missions of a few weeks. The action grants these exchanges after a pre-selection of candidates. As example, Mirjana Sulejmanović, a junior researcher from the Department of Biotechnology and Pharmaceutical Engineering at the Faculty of Technology Novi Sad (Serbia), have carried out a STSM at the University Institute of Research in Bioeconomy (BioEcoUva), Valladolid.

Grants are also awarded to help young researchers from ITC countries participate to international scientific conferences.



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