SUCCeSS

Annual report 2024

Stockholms universitet

Stockholm University Center for Sustainable and Circular Systems (SUCCeSS) is a center for interdisciplinary research with focus on Circular and sustainable processes, Circular and safe food and water systems and Data driven sustainable chemistry.
The center has been operational since 2021.

Department of Materials and
Environmental Chemistry
www.su.se/success
info.success@su.se

Layout and graphics: Azote



Note from our Director professor Aji Mathew

In 2024, SUCCeSS has reached a point where it is meaningful to analyze the achievements during the first 3 years and plan for an impactful next phase. We also welcomed this year our new deputy Director Prof. Berit Olofsson, our coordinator Varvara Apostolopoulou-Kalkavoura and our Communicator Illari Ohring This year we became increasingly convinced about the significance of interdisciplinary research led by SUCCeSS for achieving sustainability and circularity. We successfully secured funding for several SUCCeSS-related activities and also hosted workshops and seminars to the boost thematic focus on data driven sustainable and circular design. We are particularly proud to see the investments in our Early Career researchers are starting to pay off. A testament to the success of this investment is that two of them just got funding from the Mistra Challenge call for circular systems research, for projects where they are maintaining and strengthening the interdisciplinary network that SUCCESS initiated.

SUCCeSS Vision

To lead transformative research and engagement on circular and sustainable systems.

SUCCeSS Mission

- Provide a stimulating environment for interdisciplinary research on sustainable chemicals and materials
- Enable the adoption of a system perspective in chemistry
- Create know-how on sustainable and circular systems in collaboration with industries, policy makers and society
- Promote interdisciplinary training in circular and sustainable systems

Research Focus Areas

The ongoing activities at SUCCeSS are designed to lead and facilitate interdisciplinary research and engagement in the following research focus areas:



Circular and Sustainable Processing



Data Driven Circular and Sustainable Chemistry



Circular and Safe Food and Water Systems

Webinars

The SUCCeSS lunch webinar series continued during 2024, with experts from academia, industry and research organizations collaborating and sharing their views on different topics. The webinars continued to be well attended by 20-50 participants depending on subject, and the SUCCeSS postdocs and WISE fellows were active in hosting webinars this year. The revised invitation strategy through calendar and LinkedIn invitations increased the audience engagement. We will continue the efforts in 2025 to reach a larger audience!

See the list of 2024 SUCCeSS webinars below.

Bridging forestry, plant genetics, materials science and sustainability

January 2024

"Importance of plant biomass composition for sustainability, materials science and climate change resilience"
Edouard Pesquet, Professor at DEEP, Stockholm University



"Towards a fossil free future - the role of forests and sustainable forest industry"
Anna Karlberg, Vice President, Forest, R&D Stora Enso



Moderated by Joseph Samec, Professor at the Department of Organic Chemistry, Stockholm University

Innovative Solutions for a Sustainable Agriculture

February 2024

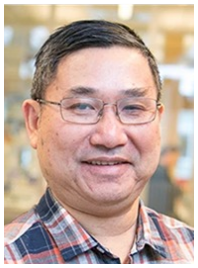
"Managing Invasive Pest Species: The case in the Philippines"
Divina M. Amalin, Director, Center for Natural Sciences and Environmental Research, DLSU, the Philippines



"Digital Phenotyping for Plat Breeding and Variety Testing"
Dan Jeric Rustia, Researcher, Greenhouse Automation and Robotics Team, WUR, the Netherlands



"Plant Diseases Under Climate Change: An Evolutionary Perspective"
Jiasui Zhan, Professor of Plant Pathology, Dep of Forest Mycology and Plant path, SLU, Sweden



Moderated by Joeselle Serrana, SUCCeSS Postdoctoral Researcher, Stockholm University

Circular Economy Challenges and Opportunities

March 2024

"Non-toxic supply chains transparency, traceability, trade-offs and knowledge gaps"
Natasja Börjeson, Post Doc, Department of Environmental Science, Stockholm University



"RegioGreenTex a European science-industry collaboration"
Stina Björquist, Researcher, Research Institutes of Sweden, RISE

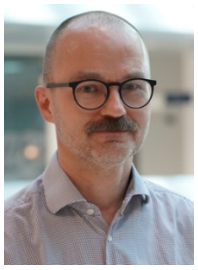


Moderated by Linnea Cederholm, SUCCeSS Postdoctoral Researcher at Stockholm University

April 2024

Sustainable Finance and Investing

"Fundamentals of Sustainable Business models"
Fredrik Nordin, Professor & Head of Stockholm Business School at Stockholm University



"Mathematical Models for Sustainable Investments"
Dr. Caroline Löbhard, Founder and CEO/CO of Goldmarie Finazen GmbH, Berlin



Moderated by Henrik Hupatz, SUCCeSS Postdoctoral Researcher at Stockholm University

May 2024

Innovations in Chemical Synthesis and Drug Discovery: Automation and DNA-Encoded Libraries

"Towards a fully automated chemistry lab"
Michael Kossenjans, Director of Chemistry, Discovery Sciences unit, AstraZeneca, Sweden



"An introduction to DNA-encoded chemical library technology"
Selmi Nidhal, Director of chemistry in the iLAB, Discovery sciences at AstraZeneca, Sweden



Moderated by Miguel Rivero-Crespo, Assistant Professor at the Department of Organic Chemistry, Stockholm University

Organic electronic materials and devices for a sustainable future

September 2024

"Epishine – organic solar cells in practice"
Dr. Anders Elfwing, Epishine, Linköping, Sweden



"Natural Dielectrics for Sustainable Organic Electronics"
Dr. Mihai Irimia-Vladu, Johannes Kepler University, Linz, Austria



Moderated by Erica Zeglio, Assistant Professor at the Department of MMK, Stockholm University

October 2024

Synthetic Mechanochemistry: Exploring different scales and new reactivity

"The different scales of mechanochemistry"
Duncan Browne, Professor, University College London



"A study on hypervalent iodine reactivity in mechanochemical settings"
Sayad Doobary-Vobora, Postdoctoral Researcher, Stockholm University



Moderated by Berit Olofsson, Professor at the Department of Organic Chemistry, Stockholm University

"SUCCESS has given us and opportunity to initiate interdisciplinary projects between different fields of chemistry. I am eager to strengthen and widen the collaborations between advanced characterization, organic chemistry and materials science!"

– Prof. Anneli Kruve, SUCCeSS PI



Networking Activities

We are continuously networking and building the SUCCeSS community. See some relevant activities below.

Afterwork event for the SUCCeSS community

March 2024



In the picture: Lennart Bergström, Niklas Hedin, Magnus Breitholtz, Henrik Hupatz, Joeselle Serrana, Anneli Kruve, Malte Posselt, Tiina Häyhä, Fredrik Nordin, Helen Blomqvist, Aji Mathew, Berit Olofsson, Varvara Apostolopoulou-Kalkavoura, Erica Zeglio, Miguel Rivero Crespo.

Speed talk and mingle event

The event was organized by the SUCCeSS postdocs Linnea Cederholm, Joeselle Serrana, Henrik Hupatz and the SUCCeSS coordinator Varvara Apostolopoulou Kalkavoura. The gathering brought together postdocs and PhD students to foster interdisciplinary collaborations and explore research across various departments. 14 PhD students and postdocs signed up for the speed talking activity in which they had the opportunity to present their research summarized in one slide within 2-3 minutes. 40-50 people attended the event at Magnéli Hall and had the opportunity to network during the mingling.



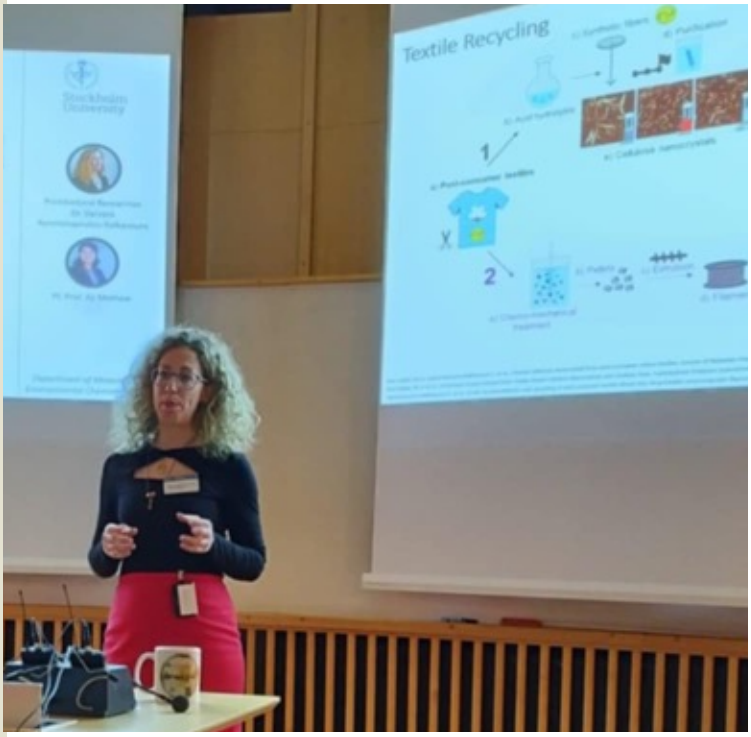
In the pictures: A group photo of the participants from the speed talk. mingle.

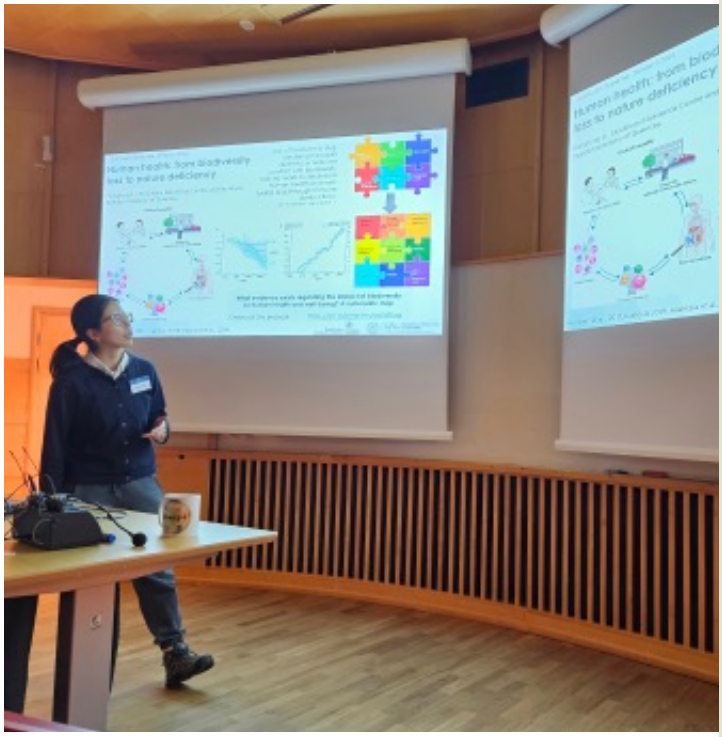


Above and on the next page: Snap shots from the speed talk event showing the presenters, audience and the mingle.






Textile Recycling







April 2024

SUCCeSS represented at a Rifo meeting

On April 17th, Varvara Apostolopoulou-Kalkavoura represented SUCCeSS at the Rifo meeting entitled 'Tryggad svensk livsmedelsförsörjning i osäkra tider – utmaningar och möjligheter (Secure Swedish food supply in uncertain times – challenges and opportunities) taking place at the Swedish parliament. Rifo (Sällskapet Riksdagsledamöter och Forskare) co-organized the meeting with FORMAS, aiming to explain the goals of the Swedish government on the topic through discussions with researchers working on the field. The seminar topic aligns with SUCCeSS' 3rd research area on sustainable food and water systems. The meeting was followed by a seminar and mingling activity at the headquarters of FORMAS.

June 2024

SUCCeSS retreat

The SUCCeSS executive team organised a two days retreat and board meeting for brainstorming and planning the future of SUCCeSS June 4-5 at Skåvsjöholm, Åkersberga. Among many practical matters, the SUCCeSS board, the executive team, the senior advisors and the Head of MMK discussed how SUCCeSS will make the transition in a new era of circular economy and data driven society. The reformulation of our vision/mission and research focus areas were extensively discussed after more than three active years. This is guided by the need to define clear goals in focus areas where SUCCeSS can excel and make an impact.



Above and on the next page: Snapshots from the SUCCeSS retreat.





SUCCeSS leadership team gathered outside Skåvsjöholm, Åkersberga: Magnus Breitholtz, Lennart Bergström, Niklas Hedin, Fredrik Nordin, Berit Olofsson, Elin Bergman, Helen Blomqvist, Aji Mathew, Varvara Apostolopoulou-Kalkavoura, Edouard Pesquet, Oskar Karlsson.

June 2024

Shaping a Circular Society: SUCCeSS Introduced at Swedish Circular Economy Colloquium

On June 11th, the SUCCeSS coordinator Dr. Varvara Apostolopoulou-Kalkavoura introduced SUCCeSS and her research within circular economy at the Swedish Circular Economy Colloquium hosted by the Circular Economy Initiative at KTH. The event was attended by researchers from 12 different Swedish universities and research institutions. The representatives presented and also participated in panel discussions focusing on how circular economy is implemented today.





In the pictures: SUCCeSS coordinator at Swedish Circular Economy Colloquium hosted by the Circular Economy Initiative at KTH.

August 2024

SUCCeSS became member of Cradlenet

SUCCeSS Advisory board member Elin Bergman is COO and spokesperson of the Swedish circular economy network Cradlenet. Cradlenet is an inspiration to SUCCeSS activities and a connection between SUCCeSS and other non-academic stakeholders that work towards circular and sustainable development. The membership provides the SUCCeSS community access to Cradlenet seminars, events and networks as well as information on upcoming policies and funding opportunities in collaboration with the Cradlenet community.

September 2024

SUCCeSS workshop on Data Driven Sustainable Synthesis and Processing

One of SUCCeSS' three research focus areas is Data Driven Circular and Sustainable Design, and the workshop was organized to bring in experts and peers to discuss the recent developments and to inspire the scientific community to build competence in this field. The workshop was hosted at Arrhenius Laboratories, Magneli Hall, Stockholm University.

The focus area connects strongly to CircuLab (Circular and Sustainable Materials Synthesis, Processing, Applications and Hazard Assessment Laboratory), which is a new infrastructure platform funded by WISE and SU. The workshop was open to collaborating networks connected to SUCCeSS and WISE, and increased the visibility of SUCCeSS within the topic and helped to develop strategies for CircuLab implementation.

Data driven and AI-assisted synthesis is the future not only to make our experiments faster but also to follow a more sustainable pathway. AI tools can help us to minimize by-products and waste while obtaining high-quality products in a cost-efficient way. The speakers gave insightful talks explaining how an AI-assisted laboratory can be planned for high throughput experiments and also the related challenges. AI driven molecular chemistry is found to be

ahead in this development compared to supramolecular chemistry and more heterogeneous systems. Among others, the panel discussions summarized the competences of future chemists interested in data driven sustainable chemistry and also highlighted the need to expand the space of structured data availability in high throughput experiments.



Speakers from left to right: Samuel Genheden, Kjell Jorner, Mimi Hii, Juho Rousu, Pascal Miéville. Moderator: Belén Martín-Matute.



Image above shows the participants of workshop gathered outside Magneli Hall.

Speakers and titles:

- *"Pivoting synthetic chemistry towards a data-led subject"*
  Mimi Hii, Prof. of Catalysis, Director of ROAR and EPSRC, Imperial College London

- *"From High-Throughput Screening to Self-Driving Labs–Unleashing AI Beyond Molecular Predictions"*
  Pascal Mieville, Operational Director Catalysis Hub Swiss CAT+, EPFL, Switzerland

- *"Paradigm shift in synthesis planning: how to exploit artificial intelligence"*
  Samuel Genheden, Assoc. Director-Deep Chemistry, Astra Zeneca

- *"Machine Learning for biologists and material scientists"*
  Rousu Juho, Prof. of Computer Science, Aalto University, Finland

- *"Digital tools for chemical design and reactivity"*
  Jorner Kjell, Ass. Prof. of Chemistry and Applied Biosciences, ETH, Switzerland

September 2024

SUCCeSS represented at WIRA-SuPRA event days at Quality Hotel Södertälje

SUCCeSS Director, Prof Aji Mathew, presented SUCCeSS and CircuLab at the WISE Research Arenas (WIRA)-SuPRA – Sustainable Polymer Research Arena, event. She discussed possibilities for collaborations in the area of sustainable polymer materials and manufacturing methods of the future, together with Sweden's leading companies, academia, and authorities.

October 2024

SUCCeSS representatives at Treesearch Progress 2024

SUCCeSS coordinator Dr. Varvara Apostolopoulou Kalkavoura together with researchers from MMK showcased research from MMK and SUCCeSS, emphasizing how transdisciplinary collaboration can solve complex challenges like textile waste management. Dr. Varvara Apostolopoulou Kalkavoura had also an invited oral presentation and she presented the different perspectives of research and how SUCCeSS is the connection between fundamental research in Academia and applied research in collaboration with SMEs and other industrial partners.



From left to right: Varvara Apostolopoulou-Kalkavoura, Ievgen Pylypchuk and Federica Ferruti.

November 2024

SUCCeSS hosted a seminar entitled Lignin in the spotlight

The seminar took place at Stockholm University and on zoom and included the talks of two notable Professors, Shinya Kajita (left) and Yuki Tobimatsu (right). It was organized by our board member Prof. Edouard Pesquet.

Speakers and titles:

- *"Natural and artificial lignins in plants: Their molecular structures and contribution to delignification processes"*
  Shinya Kajita, Professor at the Graduate School of Bio-Applications and Systems Engineering, Tokyo University of Agriculture and Technology, Japan



- *"Grass versus trees: from perspectives of lignin structure and biosynthesis"*
  Yuki Tobimatsu, Professor at the Research Institute for Sustainable Humanosphere, Kyoto University, Japan



December 2024

SUCCeSS hosted a Treesearch study visit at SU

The goal of the visit was to showcase the infrastructure of the Department of Materials and Environmental Chemistry and create new collaborations with other universities and industries. The research infrastructures were selected based on the interest of Treesearch with relevance to the forest industry. The visit attracted participants from SCA, Billerud, Lignin Industries, Westinghouse, SLU, Luleå University of Technology, Chalmers and KTH. Dr. Varvara Apostolopoulou Kalkavoura, Prof. Berit Olofsson, Dr. Tom Willhammar, Ass. Prof. Mika Sipponen and Prof. Lennart Bergström gave insightful talks egarding research collaborations challenges, opportunities and real examples. Four different demonstrations of the infrastructure were organised in smaller teams (TEM: Dr. Tom Willhammar, SEM: Houssine Khalili, Ultramicrotomy: Mathias Nero, Nanocellulose

Processing: Hongrun Chen, Senuri Hansika Kumarage).

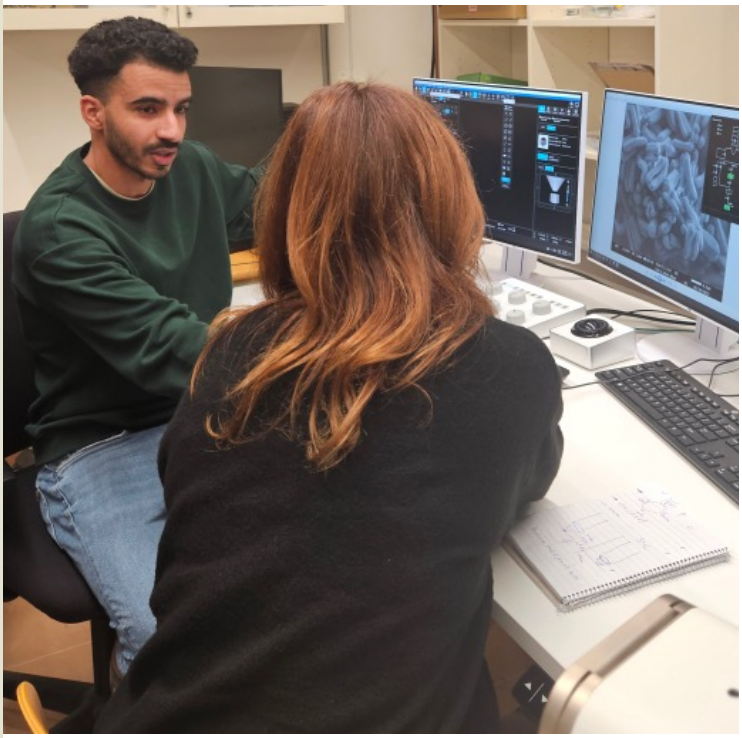


From left to right: Pramod Sivan, Faisal Zeeshan, Sheng Leslie Joevenller, Houssine Khalili, Torbjörn Lorin, Gino Natali, Nataliia Rymyk, Luigi Galluccio, Amanda Kaarna, Tom Willhammar, Iuliana Ribca, Diana Catalina Marin Quintero, Nadia Ahmadi Heidari, Berit Olofsson, Varvara Apostolopoulou Kalkavoura, Anastasia Riazanova, Mathias Nero, Alina Nikolaichuk.

On the next 2 pages: Highlights from the Treesearch study visit to the Department of Materials and Environmental Chemistry, hosted by SUCCeSS.




SUCCeSS
Collaborative achievements – KA




SUCCeSS
Biomass as a resource


SUCCeSS
Electron microscopy of wood-based material



SUCCeSS in LinkedIn

January - December 2024

Our continuous efforts to increase our network by engaging more individuals in our activities has been rewarded by the massive increase of our LinkedIn followers from less than 100 at the beginning of the year to 845 at the end of 2024. Our exponential increase of engagement gives us even more motivation for the years to come. We really want to thank every single person who is excited for our developments and supports our activities!



"It has been an incredibly rewarding experience to collaborate with the two other PIs, Associate Professor Marlene Ågerstrand and Dr. Tiina Häyhä, and to learn from their approaches to chemical regulatory research and sustainability sciences. The greatest satisfaction, however, comes from the career development of the SUCCeSS postdoc, Linnea Cederholm, who secured a highly competitive grant as a main applicant. Her work continues the legacy of the FORCES project by addressing challenging questions about the multifaceted sustainability of forest-based materials."

- Assoc. Prof. Mika Sipponen, SUCCeSS PI

Interviews with the SUCCeSS postdoctoral researchers



Dr. Linnea Cederholm

Project: 'Forest materials: opportunities and obstacles for a circular economy in Sweden – FORCES'

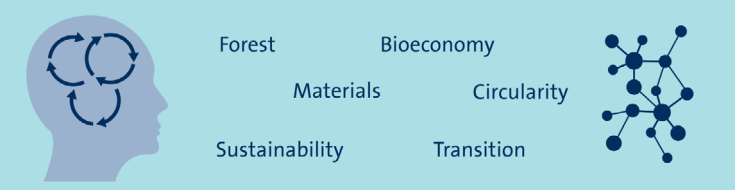
PIs: Marlene Ågerstrand ACES, Tiina Häyhä SRC and Mika Sipponen MMK

SUCCeSS focus area: Circular processing

Dr. Linnea Cederholm explores how materials chemistry, regulatory science, and sustainability can drive the forest-based bioeconomy. Shifting focus from technological development to socio-ecological and policy aspects, she uncovers both the challenges and opportunities in this interdisciplinary field.

The purpose of the project is to investigate the potential of forest-based materials in the realization of a sustainable circular economy, and aims at assessing challenges, opportunities, synergies and goal conflicts that emerge in light of this development.

"The research has shifted to focus in the socio-ecological and regulatory/policy aspects, while my chemical and technological background knowledge helps me to navigate in the system and is valuable in the interaction with industrial actors", she explains.





Dr Joeselle Serrana

Project: ‘Safe water reuse in a changing environment, microbial degradation of contaminants in European rivers’

PIs: Malte Posselt ACES, Benoît Dessirier Baltic Sea Centre and Francisco Nascimento DEEP

SUCCeSS focus area: Sustainable food and water systems

Dr Joeselle Serrana investigates how microorganisms can purify polluted water in European rivers. By combining chemical analysis, biogeochemistry and molecular biology, he aims to increase the understanding of natural purification processes and contribute to safer, more sustainable water reuse.

”In our interdisciplinary team, I have the rewarding role of bridging expertise across chemical analysis, biogeo-chemistry, and molecular biology, connecting researchers from three institutes at Stockholm University to pursue one common goal, which is advancing safe and sustainable water reuse”, Joeselle remarks.

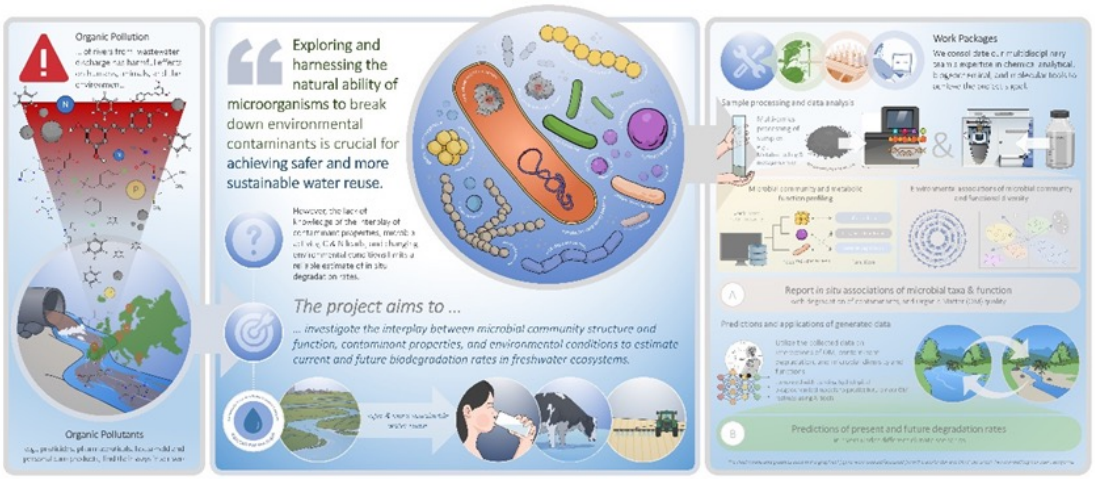


Figure 1: Making water safe: Microbes in the spotlight water purification by breaking down the contaminants.



Dr. Henrik Hupatz

Project: ‘Design of chemical reagents for fast and sensitive detection of pesticides in water and food’

PIs: Anneli Kruve, MMK, Berit Olofsson and Miguel Rivero Crespo, Organic Chemistry

SUCCeSS focus areas: Sustainable food and water systems and Data driven circular and sustainable design.

Dr. Henrik investigates a sustainable development of reagents for the fast and sensitive detection of polar pesticides, such as glyphosate. The project combines mass spectrometry with machine learning and sustainable organic chemistry.

“It is exciting but also challenging to explore the potential of generative models in chemistry for sustainable design. This project also gives me the opportunity to broaden my expertise from organic and analytical chemistry into machine learning and environmental chemistry—and I’ve already learned a tremendous amount in the process”, he explains.

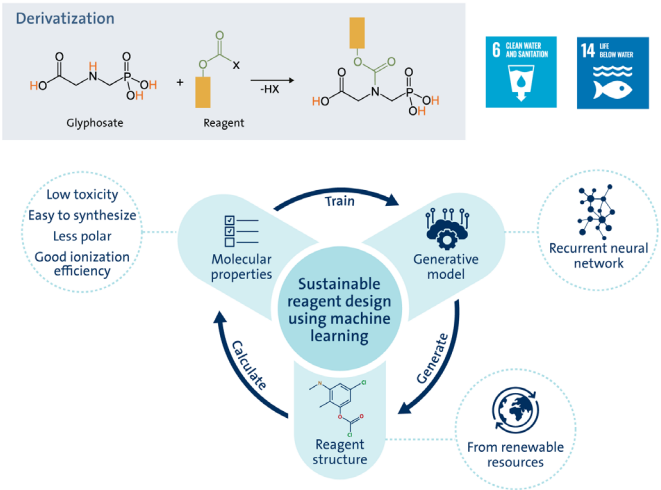
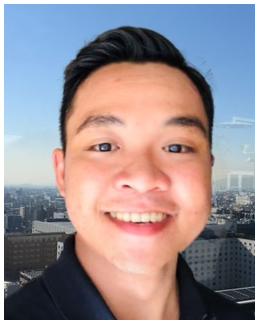


Figure 2: The inverse design approach: From tailoring the desired properties to chemical synthesis via a machine learning roadmap.

SUCCeSS-funded travel grants for short research exchanges

During 2024, SUCCeSS funded short research exchanges for six postdocs and PhD students to initiate collaborations linked to SUCCeSS. After the end of the research visits, the funded researchers are expected to submit a scientific report and organize a SUCCeSS lunch webinar to present their project.

The funded researchers and projects:



- ***Dr. Joeselle Serrana (ACES):***
  to visit Ehime University in Japan, "Monitoring Anthropogenic Pollution in Rivers: Integrating Multitrophic Biodiversity Assessment and Contaminant Analysis"



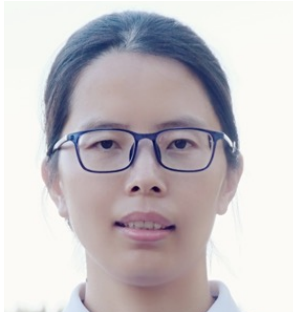
- ***Dr. Sayad Doobary-Vobora (Organic chemistry):***
  to visit University College London in UK, "Sustainable one-pot fluorination utilizing mechanochemistry"



- ***Yasmini Portes Abraham Silva (MMK):***
  to visit University of Campinas (UNICAMP) in Brazil, "Upcycling food industry side streams into functional organic-inorganic hybrid materials"



- ***Dr. Ioannis Mylonas-Margaritis (MMK):***
  to visit University of Surrey in UK, "CO2 utilization based on metal-phosphonates"



- ***Dr. Hwonghong Li (SRC):***
  to visit Wageningen University in the Netherlands, "Unlocking the creative application machine learning in understanding the linkages between biodiversity and human health and wellbeing"



- ***Erik Zhivkoplias (SRC):***
  to visit University of Vienna in Austria, "Digital Ocean Twins"

A new call has been opened after the successful first round, to promote transdisciplinary research and the acquisition of new knowledge. The new call will fund travels occurring during 2024 and 2025 with continuous evaluation and distribution of travel funds.

Secured Funding

CircuLab

The funding application for the CircuLab infrastructure was supported by SUCCeSS, with Aji Mathew and Belén Martín-Matute as main applicants. The application was successful, and was funded by Wallenberg initiative Materials Science for Sustainability (WISE) with 40 M SEK (2024-2033) and co-funded by Stockholm University.

CircuLab@WISE is a platform to experimentally develop and validate safe synthesis, processing and applications of circular and sustainable soft matter materials in a fast and efficient manner. The platform aligns well with SUCCeSS' thematic area Data driven sustainable chemistry, which will be facilitated by CircuLab. The SUCCeSS community will act as the networking node to attract users beyond SU and WISE network to CircuLab.

BioLUSH (Biomass valorization for sustainable and high-quality fibres)

BioLUSH is an EU Horizon Consortium of 12 partners, led by Stockholm University with focus on circular use of plant biomass leading to decarbonization and reduced eutrophication. SUCCeSS Director Aji Mathew is the scientific coordinator for this consortium. The project aims to retain the value of the EU's fibrous biomass and promote the growth of the European fibrous bio-economy. The funding approx. 50 MSEK of is for 4 years, during 2023-2027.

SUCCeSS is the focal point of this consortium within Stockholm University, and brings together SUCCeSS-affiliated researchers are Aji Mathew- Department of Materials and Environmental Chemistry (MMK), Joseph Samec- Department of organic chemistry (OC) and Edoaurd Pesquet -Department of Ecology, Environment and Plant Sciences (DEEP).

Mistra Challenge Funding

Two of the researchers from the SUCCESS postdoc project FORCES secured new funding from Mistra Challenge call 2024.

Tiina Häyhä, who is a SUCCeSS PI from the Stockholm Resilience Centre, has been awarded a research grant from Mistra, the Swedish Foundation for Strategic Environmental Research. She will investigate barriers and opportunities to reduce global resource use while promoting sustainable development.

Linnea Cederholm is a SUCCeSS postdoc, her research focuses on forest-based materials and how to transform the bioeconomy to beat the planetary crisis. Her new project will explore sufficiency and its implications on the bioeconomy, with focus the Swedish forest-based sector and create new knowledge of how 'strong' sustainability can be introduced to the production and consumption system of forest-based materials.



FORCES team: Assoc Prof. Mika Sipponen, Dr. Tiina Häyhä, Assoc. Prof. Marlene Ågerstrand and Dr. Linnea Cederholm.

Nobel Symposium in May 2025

SUCCeSS has secured funding to host the Nobel symposium on “Chemistry for Sustainability: Fundamental Advances”, with SUCCeSS Deputy Director Berit Olofsson as main applicant. The symposium will take place May 19-22, 2025.

Chemistry for sustainability is a strongly growing research field focusing on the transformative, dynamic and adaptive power of green chemistry and sustainable chemistry to progress towards the United Nations Sustainable Development Goals. Leading researchers and emerging scholars from across the globe will meet in Stockholm to discuss the significant breakthroughs in our understanding of sustainable chemistry.

The organizing committee consists of

- ***Chair:*** *Berit Olofsson, SU (Deputy Director of SUCCeSS)*
- ***Co-Chair:*** *Aji Mathew, SU (Director of SUCCeSS)*
- ***Advisory Chair:*** *Paul Anastas, Yale University, USA (Senior advisor SUCCeSS)*
- ***Members:*** *Oskar Karlsson, Stockholm University (Board member SUCCeSS); Tetyana Budnyak, Uppsala University; Yuanyuan Li, KTH*

SUCCeSS looks forward to hosting the Nobel Symposium in 2025!

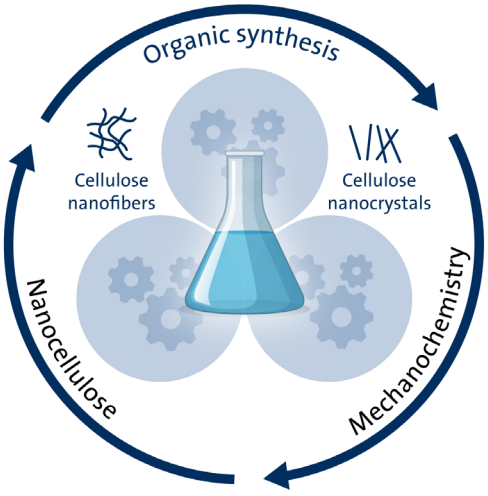
Publications

October 2024

SUCCeSS Directors published a Perspective in Chem

The Perspective summarizes the progress in the use of nanocellulose in organic synthesis, with an outlook to recent applications in mechanochemistry. It is a perfect example of interdisciplinary research showcasing how organic synthesis meets materials science to adopt a new sustainable concept of valorising forest materials in a sustainable low carbon footprint organic synthesis.

It was recently reported that nanocellulose can be used as medium, support or catalyst in organic synthesis under mechanochemical conditions. This field is still in its infancy, and the exact mechanism of the mechano-chemical assistance of nanocellulose in organic synthesis is not understood. The SUCCeSS authors foresee that solvent-free organic synthesis supported by biobased resources can be an important step towards more sustainable synthetic pathways, and aim to investigate the recycling of nanocellulose and usage in large-scale applications in the coming years.



S. Doobary, V. Apostolopoulou Kalkavoura, A. P. Mathew, B. Olofsson - Nanocellulose: New horizons in organic chemistry and beyond - Chem, 2024, 10, 3279-3293. (All authors have SUCCeSS affiliation)

All researchers at SU, who publish in the SUCCESS research areas and who are/have been part of SUCCeSS activities, are welcome to use the SUCCeSS affiliation without need for prior approval by SUCCeSS.

Researchers who have received funding from SUCCeSS are required to use the affiliation when publishing results related to the funding. This includes the SUCCeSS PIs, SUCCeSS post docs, SUCCeSS travel grant recipients, and SUCCeSS executive committee.

SUCCeSS Affiliation to use:

Stockholm University Center for Circular and Sustainable Systems (SUCCeSS), Stockholm University, 106 91 Stockholm, Sweden

Publication list for 2024

- **Cross-taxa assessment of species diversity and phylogenetic structure of benthic communities in a dam-impacted river undergoing habitat restoration**
  J. M. Serrana, B. Li, K. Watanabe

  Science of The Total Environment, **2025**, *958*, 177886.
  Link

- **Upcycling Textile Waste into Anionic and Cationic Cellulose Nanofibrils and Their Assembly into 2D and 3D Materials**
  Maria-Ximena Ruiz-Caldas, Varvara Apostolopoulou-Kalkavoura, Laura Pacoste, Aleksander Jaworski, Aji P. Mathew

  ChemSusChem **2024**, e202402103.
  Link

- **Perfluorooctanesulfonic acid (PFOS) induced cancer related DNA methylation alterations in human breast cells: A whole genome methylome study**
  P. Pierozan, A. Höglund, E. Theodoropoulou, O. Karlsson

  Science of The Total Environment **2024**, *949,* 174864.
  Link

- **Automated Image-Based Fluorescence Screening of Mitochondrial Membrane Potential in Daphnia magna: An Advanced Ecotoxicological Testing Tool**
  C. Abele, A. Perez, A. Höglund, P. Pierozan, M. Breitholt, O. Karlsson

  Environmental Science & Technology **2024,** *58,* 15926-15937.
  Link

- **Hypervalent iodine chemistry with a mechanochemical twist**
  S. Doobary, M. M. de Vries Ibáñez, B. Olofsson

  Green Chemistry **2024**, *26,* 11518-11523.
  Link

- **Nanocellulose: New horizons in organic chemistry and beyond**
  S. Doobary, V. Apostolopoulou Kalkavoura, A. P. Mathew, B. Olofsson

  Chem **2024**, *10,* 3279-3293.
  Link

- **Understanding the effect of different nanocelluloses on the proliferation and biomechanical properties of E. coli**
  A. Aguilar-Sánchez, J. Li, B. Jalvo, E. Pesquet, A. P. Mathew

  Cell Reports Physical Science **2024**, *5,* 102226.
  Link

- **Critical review on in silico methods for structural annotation of chemicals detected with LC/HRMS non-targeted screening**
  H. Hupatz, I. Rahu, W.-C. Wang, P. Peets, E. H. Palm, A. Kruve

  Analytical and Bioanalytical Chemistry **2024**, *417,* 473-493.
  Link

- **In Situ Functionalisation and Upcycling of Post-Consumer Textile Blends into 3D Printable Nanocomposite Filaments**
  V. Apostolopoulou-Kalkavoura, N. Fijoł, S. Lombardo, M.-X. Ruiz-Caldas, A. P. Mathew

  Advanced Sustainable Systems **2024**, *8,* 2400132.
  Link

- **Prospects for the integration of lignin materials into the circular economy**
  B. L. Tardy, E. Lizundia, C. Guizani, M. Hakkarainen, M. H. Sipponen

  Materials Today, **2023**, *65*, 122-132.
  Link

”The funding from the SUCCeSS enabled me to hire my first postdoctoral researcher, which was invaluable in establishing my working group. Being part of SUCCeSS also gave me valuable opportunities to expand my network and establish connections, including closer collaboration with MMK and DEEP, which have been highly beneficial for my research. I look forward to continuing these collaborations beyond the project.”

- Asst. Prof. Malte Posselt, SUCCeSS PI



SUCCeSS Organization

In January 2024, several organization changes took place. In the executive team, Berit Olofsson took on the task as Deputy Director (previously Chair of the SUCCeSS board), and Varvara Apostolopoulou-Kalkavoura joined as SUCCeSS coordinator. Ilari Ohring has handled the SUCCeSS website.

The current SUCCeSS board is appointed for the period 2024-2026, with Magnus Breitholtz as Chair, and several new members: Fredrik Nordin, Edouard Pesquet, Joseph Samec and Helen Blomqvist.







The Executive Board

- **Aji P Mathew**, Director, Professor in Materials Chemistry at SU. Research focus on sustainable and biobased functional materials processing, characterisation and applications.
- **Berit Olofsson**,Deputy Director, Professor of Organic Chemistry at SU. Research focus on sustainable organic synthesis using hypervalent iodine chemistry, including mechanochemistry.
- **Varvara Apostolopoulou-Kalkavoura**, Coordinator, Post-doctoral Researcher at SU, PhD in Materials Chemistry. Research focus on textile recycling and thermal insulation foams.

















The Steering Board

- **Magnus Breitholtz**,Chair, Professor in Ecotoxicology, Advisor to the President with regards to Environmental and Sustainable Development. Research focus on eco-toxicology and risk assessment of chemicals.
- **Line Gordon**, Vice Chair, Curt Bergfors Professor in Sustainability Science, Director of Stockholm Resilience Centre (SRC) at SU. Research focus on the sustainability and resilience of the biosphere through food and water.
- **Helen Blomqvist**, Board member, CEO Sandvik Coromant, PhD in Materials Chemistry from SU.
- **Lennart Bergström**, Board member, Professor in Materials Chemistry at SU. Research focus on materials chemistry directed towards applied surface and colloid science related to sustainable materials.
- **Joseph Samec**, Board member, Professor in Organic Chemistry at SU, research focus on green chemistry in organic synthesis and biomass processing and applications.
- **Edouard Pesquet**, Board member, Professor in Plant Cell Biology at SI, PI of ”Cell differentiation and coordination in tissues” research team.
- **Fredrik Nordin**,Board member, Professor in Business Administration at SU with a specialization in marketing, Head of Stockholm Business School and specialized in marketing.
- **Oskar Karlsson**, Board member, Associate Professor in Environmental Chemistry at SU. Research focus on developmental origins of health and disease with an emphasis on the exposome and underlying molecular mechanisms.

Senior Advisors

The senior advisors of SUCCeSS support the center through active discussions, providing seminars and teaching on master level courses.



- **Paul Anastas**, Professor, Director of the Center for Green Chemistry and Green Engineering at Yale University, USA, is world renowned as one of the founders of Green Chemistry.



- **John Warner,** Professor, has spent his life working to ensure that all practicing chemists will one day have the necessary skills to invent truly sustainable technologies. John is a chemist, inventor, educator, entrepreneur, and the co-founder of Green Chemistry.



- **Tanja Zimmermann,** Professor, Director at EMPA, the Swiss Federal Laboratories for Materials Science and Technology, research focus on applied wood materials and nanocomposites.



- **Elin Bergman,** COO and spokesperson of the Swedish circular economy network Cradlenet, and is also one of the co-founders of the Nordic Circular Hotspot a collaboration platform for accelerating circular economy in the region.

Thank you and goodbye

At the end of 2024, SUCCeSS' coordinator Varvara Apostolopoulou-Kalkavoura left SU to work as CTO at a start-up. Prof. Lennart Bergström decided to leave the SUCCeSS board and he wishes good luck to all the future activities of the center. We thank them for all their contributions to SUCCeSS.



Lennart Bergström and Varvara Apostolopoulou-Kalkavoura

Department of Materials and
Environmental Chemistry
www.su.se/success