

# ETOC

Enabling Technologies for Organic Chemistry



**Day 1** February 24<sup>th</sup>, 2022: 15:00 – 19:00 (CET)

**Day 2** February 25<sup>th</sup>, 2022: 15:00 – 19:00 (CET)

## Day 1

**Thomas Magauer**

University of Innsbruck

*High Pressure in Total Synthesis:  
A Case Study*

15:00 – 15:40 CET

**Todd Hyster**

Cornell University

*Photoenzymatic Catalysis - Using Light  
to Reveal New Enzyme Functions*

15:50 – 16:30 CET

**Milad Abolhasani**

North Carolina  
State University

*Flow Chemistry: A Sustainable Voyage  
through the Chemical Universe  
en route to Smart Manufacturing*

16:40 – 17:20 CET

**Alexandra Sun**

Small Molecule Process  
R&D, Merck

*A Vision-Guided, High-Throughput Liquid  
Extraction Screening Platform*

17:40 – 18:00 CET

**Anna Slater**

University of  
Liverpool

*Flow Chemistry for Supramolecular  
Processes*

18:05 – 18:25 CET

## Day 2

**Duncan Browne**

University College  
of London

*Exploring Enabling Technologies  
for Organic Synthesis & Drug Discovery*

15:00 – 15:40 CET

**Song Lin**

Cornell University

*Amping Up Organic Synthesis  
with Electrochemistry*

15:50 – 16:30 CET

**Kaid Harper**

AbbVie Process  
Research and Development

*Commercial Scale Photo  
and Electro Chemistry*

16:40 – 17:20 CET

**Dario Cambié**

Max Planck Institute  
for Colloids and Interfaces

*Merging chemistry and data science  
with automated flow chemistry  
experiments*

17:40 – 18:00 CET

**Nessa Carson**

Syngenta

*Scripting Chemistry  
Workflows for Automation Efficiency*

18:05 – 18:25 CET

## Plenary Talks

(40 min + Q&A)

## Keynote Talks

(20 min + Q&A)



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*University Innsbruck*

15:00 – 15:40 CET

**Todd Hyster**  
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15:50 – 16:30 CET

**Milad Abolhasani**  
*North Carolina State University*

16:40 – 17:20 CET



**Thomas Magauer, PhD**  
**Full Professor**  
**University of Innsbruck**

#### Title of the talk:

*High Pressure in Total Synthesis: A Case Study*

**Bio:** Tommy was born in Linz, Upper Austria in 1983. In 2002, he moved to Vienna to study chemistry at the University of Vienna. In 2007, he joined the laboratories of Prof. Johann Mulzer for his PhD studies developing chemical syntheses of the natural products kendomycin and echinopine A and B. In 2009, he moved to Harvard University (USA) to work as an FWF Erwin Schrödinger fellow with Prof. Andrew G. Myers. In 2012, he began his independent research as a FCI Liebig and a DFG Emmy Noether Group Leader at the LMU Munich. In 2017, Tommy was awarded the Goering Visiting Professorship at the University of Wisconsin, Madison. In the same year he was appointed as Full Professor of Synthesis and Synthetic Methods at the University of Innsbruck (Austria), currently serving as the head of the Institute of Organic Chemistry. His research program has been supported by the Austrian Science Fund (FWF), by an ERC Starting Grant (2017–2022) and an ERC Consolidator Grant (2022–2027).

### Keynote Talks

(20 min + Q&A)

**Alexandra Sun**  
*Small Molecule Process R&D, Merck*

17:40 – 18:00 CET

**Anna Slater**  
*University of Liverpool*

18:05 – 18:25 CET



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*University of  
Liverpool*

18:05 – 18:25 CET



**Todd Kurt Hyster, PhD**

**Associate Professor**

**Cornell University**

**Department of Chemistry  
and Chemical Biology**

#### Title of the talk:

*Photoenzymatic Catalysis - Using Light to Reveal New  
Enzyme Functions*

**Bio:** Todd is a native of Minnesota and did his undergraduate studies at the University of Minnesota. In 2008 he joined the group of Tomislav Rovis at Colorado State University for his graduate studies to develop Rhodium-catalyzed C–H activation reactions. During his Ph.D., Todd did an internship with Thomas Ward at the University of Basel where he prepared an artificial metalloenzyme for an asymmetric C–H activation reaction. After graduating, he joined the group of Frances Arnold at Caltech as an NIH Postdoctoral Fellow. In the Arnold group, Todd evolved P450s to catalyze nitrene transfer reactions. In 2015 he started his independent career at Princeton University and in 2021 moved to Cornell University, where he is currently an Associate Professor of Chemistry and Chemical Biology. Todd's group has developed photochemical strategies to expand the synthetic utility of common enzymes, enabling them to address long-standing selectivity challenges in the chemical synthesis literature.

### Keynote Talks

(20 min + Q&A)



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**Day 2** February 25<sup>th</sup>, 2022: 15:00 – 19:00 (CET)

## Day 2

### Plenary Talks

(40 min + Q&A)

**Thomas Magauer**

*University Innsbruck*

15:00 – 15:40 CET

**Todd Hyster**

*Cornell University*

15:50 – 16:30 CET

**Milad Abolhasani**

*North Carolina State University*

16:40 – 17:20 CET



**Milad Abolhasani, PhD**

**Associate Professor**

**North Carolina State**

**University**

**Department of Chemical and Biomolecular Engineering**

#### Title of the talk:

*Flow Chemistry: A Sustainable Voyage through the Chemical Universe en route to Smart Manufacturing*

**Bio:** Milad Abolhasani is an Associate Professor and a University Faculty Scholar in the Department of Chemical and Biomolecular Engineering at North Carolina State University. He received his Ph.D. from the University of Toronto in 2014. Prior to joining NC State University, he was an NSERC postdoctoral fellow in the Department of Chemical Engineering at MIT (2014-2016). Dr. Abolhasani leads a diverse research group that studies flow chemistry strategies tailored towards accelerated development and manufacturing of advanced functional materials and molecules using autonomous robotic experimentation. Dr. Abolhasani has received numerous awards and fellowships, including NSF CAREER Award, AIChE 35 Under 35, Dreyfus Award for Machine Learning in the Chemical Sciences & Engineering, I &EC Research 2021 Class of Influential Researchers, ACS-PRF Doctoral New Investigator Award, AIChE Futures Scholar, and Emerging Investigator recognition from Lab on a Chip, Reaction Chemistry & Engineering, and Journal of Flow Chemistry.

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(20 min + Q&A)

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*Small Molecule Process R&D, Merck*

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*Cornell University*

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**Milad Abolhasani**  
*North Carolina State University*

16:40 – 17:20 CET



**Alexandra Sun, PhD**  
**Senior Scientist**  
**Data-Rich Experimentation Group, Small Molecule Process Research and Development, Merck**

#### Title of the talk:

*A Vision-Guided, High-Throughput Liquid Extraction Screening Platform*

**Bio:** Alex grew up in Boston, Massachusetts and obtained her B.S. in Chemistry from Brandeis University. She pursued her PhD studies at the University of Michigan with Prof. Corey Stephenson as a National Science Foundation Graduate Research Fellow. In the Stephenson lab, she developed photoredox alkylation methods and designed a droplet microfluidics platform for photochemical reaction discovery. Alex joined Merck in 2020, where she is currently a Senior Scientist in the Data-Rich Experimentation (DRE) group within Small Molecule Process Research and Development. In the DRE group, she is involved in the development of automation and HTE tools for accelerating process development.

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*North Carolina State University*

16:40 – 17:20 CET



**Anna Slater, PhD**  
**Royal Society University**  
**Research Fellow**  
**University of Liverpool**  
**Department of Chemistry & Materials Innovation Factory**

#### Title of the talk:

*Flow Chemistry for Supramolecular Processes*

**Bio:** Anna Slater received her PhD in supramolecular chemistry from the University of Nottingham in 2011. Following postdoctoral positions in porphyrin self-assembly (University of Nottingham) and porous organic cage materials (University of Liverpool) she took up a Royal Society-EPSCRC Dorothy Hodgkin Fellowship in 2016 and a Royal Society University Research Fellowship in 2021. Anna developed an interest in flow chemistry during her PDRA positions, recognising that flow technology has a lot to offer the supramolecular chemist; exploiting flow processes for enhanced control of chemistry is now a central theme of her work. Her research interests include molecular materials, enabling technology and organic synthesis and self-assembly. Her research group is based between the Department of Chemistry and the Materials Innovation Factory at the University of Liverpool.

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*Small Molecule Process R&D, Merck*

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*University College of London*

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#### Song Lin

*Cornell University*

15:50 – 16:30 CET

#### Kaid Harper

*AbbVie Process Research and Development*

16:40 – 17:20 CET



**Duncan Browne, PhD**

**Associate Professor**

**University College of London**

**Department of Pharmaceutical and Biological Chemistry**

#### Title of the talk:

*Exploring Enabling Technologies for Organic Synthesis & Drug Discovery*

**Bio:** The Browne Research Group explores and develops the use of enabling technologies for chemical synthesis and drug discovery. Research is currently focussed on mechanochemistry (ball milling) and continuous flow processing. We are particularly interested in technology-facilitated processes that lead to new reactivity, improved sustainability or improved safety. Through collaborations we are also exploring continuous electrochemistry and the use of microwave measurements to characterize catalysts. Round-bottom flask techniques underpin everything that we do.

Duncan studied for his PhD at the University of Sheffield under the mentorship of Joe Harrity and was let loose in Steve Leys flow labs at University of Cambridge as a Postdoc. In 2014 Duncan, Joey and Christiane founded the Browne research group at Cardiff University, and Duncan gave his newly commissioned final year lecture course entitled "Enabling Technologies for Organic Synthesis". In Nov 2019 Duncan moved to UCL where together with Harry and Riley they founded the London branch of the Browne Research Group.

### Keynote Talks

(20 min + Q&A)

#### Dario Cambié

*Max Planck Institute for Colloids and Interfaces*

17:40 – 18:00 CET

#### Nessa Carson

*Syngenta*

18:05 – 18:25 CET



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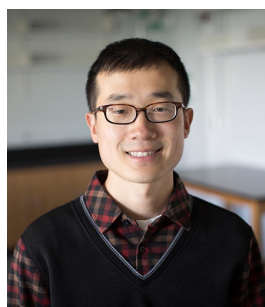
#### Nessa Carson

*Syngenta*

18:05 – 18:25 CET

### Keynote Talks

(20 min + Q&A)



**Song Lin, PhD**

**Associate Professor**

**Cornell University**

#### Title of the talk:

*Amping Up Organic Synthesis with Electrochemistry*

**Bio:** Song Lin grew up in Tianjin, China. After obtaining B.S. from Peking University in 2008, Song embarked his graduate studies at Harvard University working with Eric Jacobsen. He then carried out postdoctoral studies with Chris Chang at UC Berkeley. In 2016, Song started his independent career at Cornell University, where he is currently an Associate Professor. Song has received several early career awards, including Sloan Fellowship, National Fresenius Award, Cottrell Scholar Award, Camille Dreyfus Teacher-Scholar Award, NSF CAREER Award, and MIT Technology Review Innovators Under 35. He is currently an Associate Editor at *Organic Letters* and has served on the Early Career Advisory Board of *ACS Catalysis* and *Chemistry–A European Journal*.



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*AbbVie Process Research and Development*

16:40 – 17:20 CET



**Kaid Harper, PhD**

**Principal Investigator**

**AbbVie Process Research and Development**

#### Title of the talk:

*Commercial Scale Photo and Electro Chemistry*

**Bio:** Kaid received his BS degree in Chemistry from Brigham Young University and followed that with a short move up the road to the University of Utah where he got his PhD with Matt Sigman studying multi-dimensional free-energy relationships in asymmetric catalysis. He then moved to Harvard as the Dreyfus Environmental Post-Doc where he investigated bis-thiourea catalyst for stereospecific glycosylations. He joined AbbVie in 2015, working in a cross-functional group of organic chemists and chemical engineers studying reaction mechanisms and applying chemical technologies. Since joining AbbVie, he has received multiple internal awards for flow chemistry, photochemistry and electrochemistry.

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**Dario Cambié, PhD**

**Group Leader**

**Max Planck Institute for Colloids and Interfaces Biomolecular Systems Department**

#### Title of the talk:

*Merging chemistry and data science with automated flow chemistry experiments*

**Bio:** Dario Cambié studied Chemistry and Pharmaceutical Technologies at the University of Milan, where he obtained his M.Sc. degree in 2014 with a thesis on the synthesis of novel BACE inhibitors. After an internship at Bayer in Leverkusen (Germany), he started his Ph.D. research at the Eindhoven University of Technology (The Netherlands) in the group of Prof. Timothy Noël, working on luminescent solar concentrator photomicroreactors (LSC-PMs). He was part of the 2018 class of CAS SciFinder Future Leaders, and in 2019 he received his PhD cum laude. In October 2020, after a postdoc in the Cronin group at the University of Glasgow (Scotland), he became group leader of the Continuous Flow Chemistry group in the Biomolecular System department of the Max Planck Institute of Colloids and Interfaces in Potsdam (Germany). His research group focuses on the digitalization of chemistry with flow chemistry.

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*AbbVie Process Research and Development*

16:40 – 17:20 CET



**Nessa Carson**

**Principal Automation**

**Scientist**

**Syngenta**

#### Title of the talk:

*Scripting Chemistry Workflows for Automation Efficiency*

**Bio:** Nessa Carson started her career in the pharmaceutical industry after obtaining two Master's degrees in organic chemistry and catalysis at Oxford University and the University of Illinois at Urbana-Champaign. After working in small molecule synthesis for discovery chemistry at AMRI, she moved within the company to run the high-throughput automation laboratory on behalf of Eli Lilly in the UK, before moving to Pfizer as a high-throughput automation chemist. She is currently a Principal Automation Chemist at Syngenta, where she works on medium-throughput reaction optimization and data management. Nessa maintains a website of useful chemistry resources, <https://supersciencegrl.co.uk>, and was recently awarded the Salters' Institute Centenary Award for early career chemists with the potential to make a long-term contribution to industrial chemistry.

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