



1st ARISTOTLE CONFERENCE ON CHEMISTRY

Advances and Challenges in Chemistry

<https://acc2023.chem.auth.gr>

**Scientific activities and accomplishments
of the Laboratory of Organic Chemistry, School of Chemistry, AUTh**

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Aristotle University of Thessaloniki



School of Chemistry



Laboratory of Organic Chemistry,from the first day!

- The **Laboratory of Organic Chemistry was founded in 1939**, as part of the Faculty of Physical and Mathematical Sciences of the AUTH and operated in the basement of the old building of the Faculty of Philosophy of the University.
- Together with the Laboratories of Inorganic Physical Chemistry, generated the initial nucleus for the creation of the Department of Chemistry in 1943 (Prof. George Varvoglis).
- In 1957, the Laboratory was moved to the building that exist today (Old Chemistry).



Laboratory room in the basement of the old Philosophical School (Photo archive G. Manousakis).

Laboratory of Organic Chemistry, today!

Facilities - equipment

The LOC hosts and trains annually more than 200 graduate students, with undergraduate laboratory courses in renovated rooms. The theoretical courses are held in the main auditorium of the Department (N. Alexandrou), while the laboratory courses are held in smaller groups in the two laboratory-educational rooms on the 2nd floor of the old building.



Laboratory and Scientific Instruments

The LOC provides the possibility to conduct numerous experiments and measurements for the characterization of organic compounds, biomolecules, natural products, polymers, organometallics and composite organic materials. **NMR spectrophotometers (500 and 300 MHz)**, high pressure gas and liquid chromatography analytical devices (**GC and HPLC**), liquid chromatography with mass detector, (**LC-MS**), are exist and used for such compounds characterization and sample analysis.



Laboratory staff

Emeritus Professors of the Laboratory of Organic Chemistry



Prof. D. Nicolaedist,



Prof. A. Varvoglis,

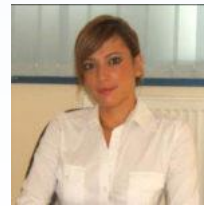
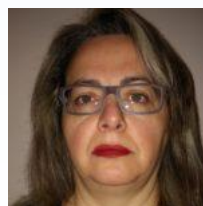


Prof. I. Gallos,



Prof. K. Litinas

Today the Organic Chemistry Laboratory is staffed by six members, **A. Koumbis** (Professor of Chemistry and Director of the Organic Chemistry and Biochemistry Division), **K. Fylaktakidou** (Professor of Chemistry), **I. Lykakis** (Professor of Chemistry), **V. Sarli** (Assoc. Professor of Chemistry and Director of the Laboratory of Organic Chemistry), **A. Zografos** (Assoc. Professor of Chemistry) and **C. Stathakis** (Assistant Professor of Chemistry), with individual scientific area. Important teaching assistance in the two laboratory courses is provided by Ms. E. Evgenidou, Lab Teaching Staff member of the Department of Chemistry.



Laboratory staff

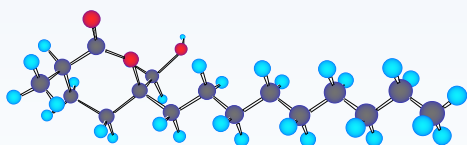


Research interests:

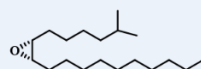
- Chemistry of carbohydrates, inositols, aminoacids, modified nucleosides and oximes with biological interest

- Total synthesis of natural products
- Methodologies in organic synthesis
- Medicinal chemistry

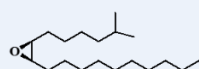
ALEXANDROS E. KOUMBIS
Professor of Organic Chemistry



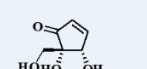
- Synthesis of natural products in high optical purity



Disparlure (2005)
pheromone



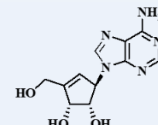
ent-Disparlure (2005)
pheromone



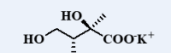
Pentenomycin I (2005)
antibiotic



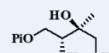
erythro-Saccharinic acid lactone (2006)
pheromone



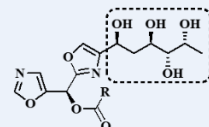
Neplanocin A (2005)
antiviral - anticancer



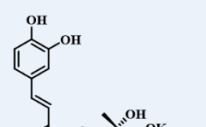
Methyl-butanoate A (2006)
leaf-closing substance



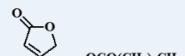
MEP (2007)
mevalonate Independent Pathway intermediate



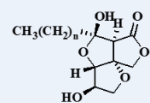
Benzazole A side chain (2007)
antihelmintic - antifungal



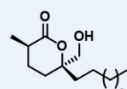
Potassium Aeschynomate (2014)
leaf-closing factor



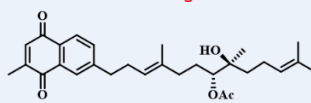
Syringolides 1 & 2 (2009)
plant extracellular elicitors



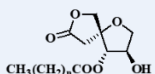
Syringolides 1 & 2 (2009)
plant extracellular elicitors



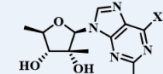
Malyngolide (2003)
antibacterial



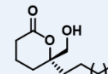
Chabrolonaphthoquinone B (2021)
anticancer



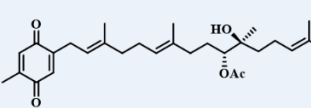
Secosyrins 1 & 2 (2006)
plant extracellular elicitors



Trachycladines and analogues (2014-17)
anti-cancer agents

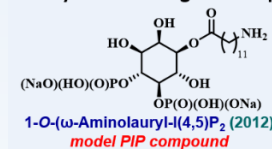


Tanikolide (2003)
antifungal

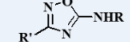


Chabrolbenzoquinone H (2022)
anticancer

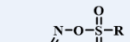
- Synthesis of organic compounds with biological, pharmaceutical and environmental interest



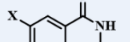
1-O-(omega-Aminolauryl)-(4,5)P₂ (2012)
model PIP compound



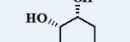
5-Amino-1,2,4-oxadiazoles (2010)
anti-inflammatory



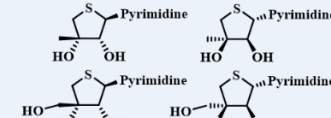
Sulfonyl amidoximes (2014)
antioxidants



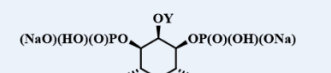
Quinazolones (2021)
DNA photo-cleaving agents



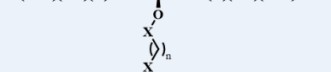
pseudo-Frucopyranose (2008)
non-nutritional sweetener



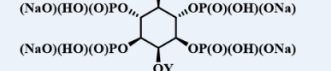
Pyrimidine (deoxy)apiothionucleosides (2013-15)
anti-cancer agents



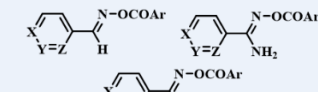
Polyphosphorylated myo-inositol dimers (2015)
competitive antagonists of IP₃ receptor



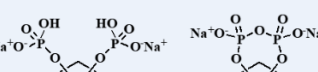
myo-Inositol phosphates and pyrophosphates (2011)
allosteric effectors of hemoglobin



Phosphorylated pentoses and hexoses (2011)
allosteric effectors of hemoglobin



Pyridine oximes & amidoximes (2015-20)
DNA photo-cleaving agents



Phenyl amidoximes carbamates (2023)
DNA photo-cleaving agents

Laboratory staff

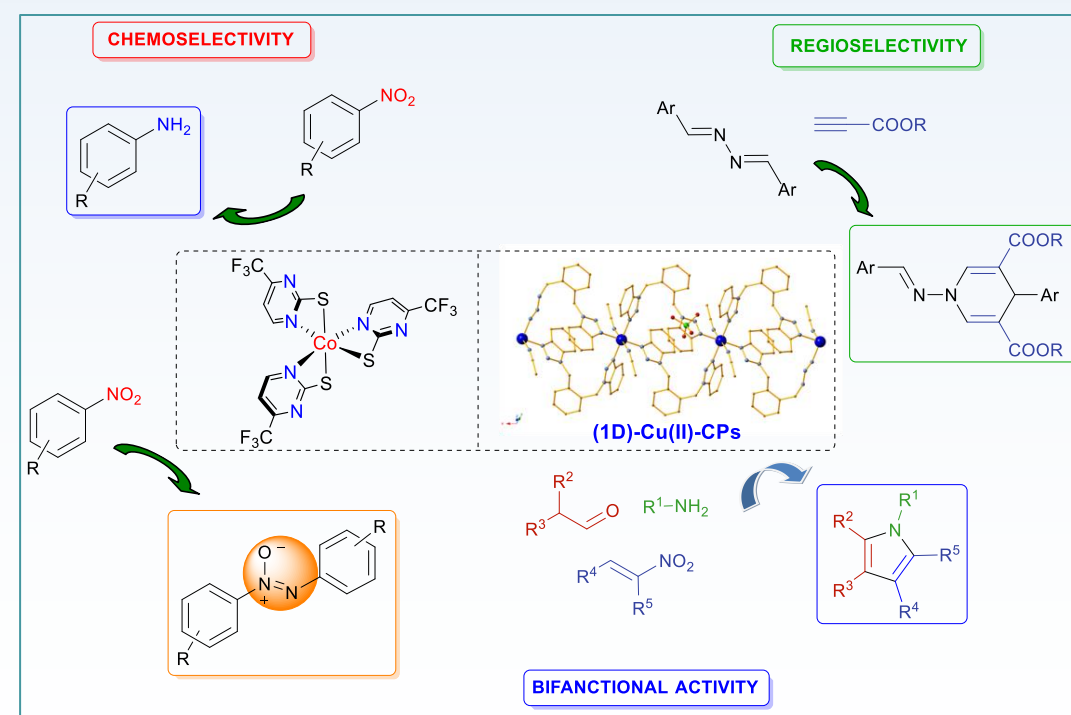
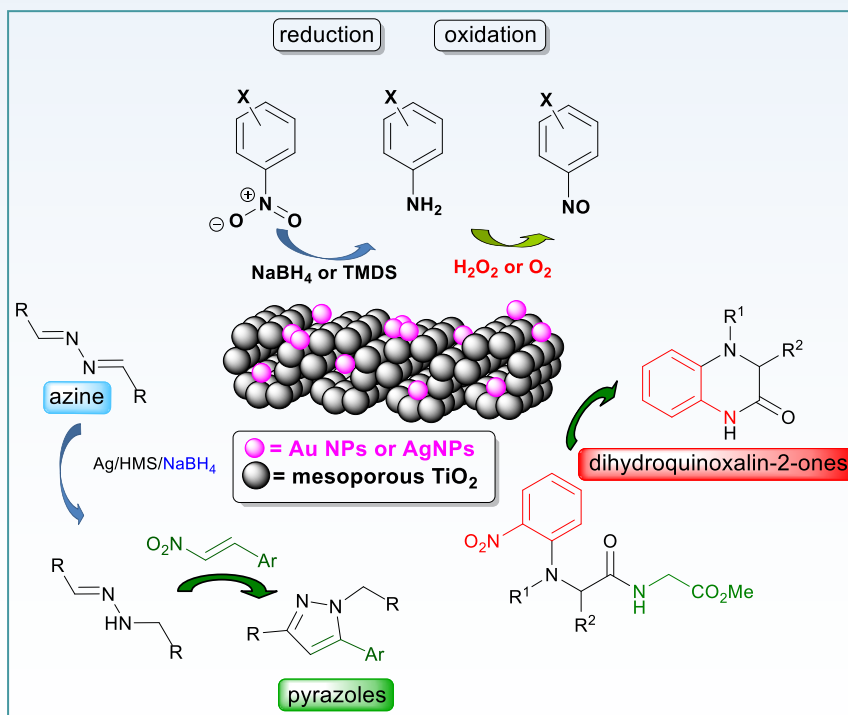


Ioannis Lykakis
Professor of Organic
Chemistry



Research interests:

- Green Synthetic Methodologies in Organic Chemistry.
- Catalytic Organic Strategies for Heterocycles Synthesis using metal nanoparticles or metal-complexes.
- Photocatalytic Organic Redox Transformations with polyoxometalates.



Laboratory staff

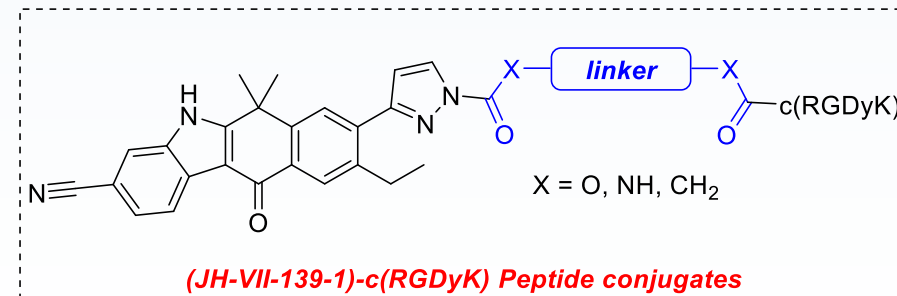
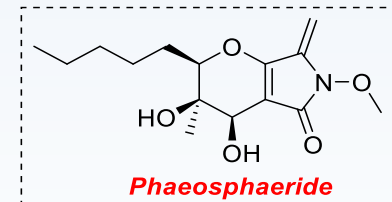
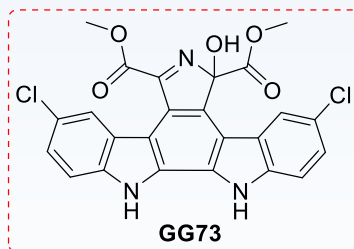
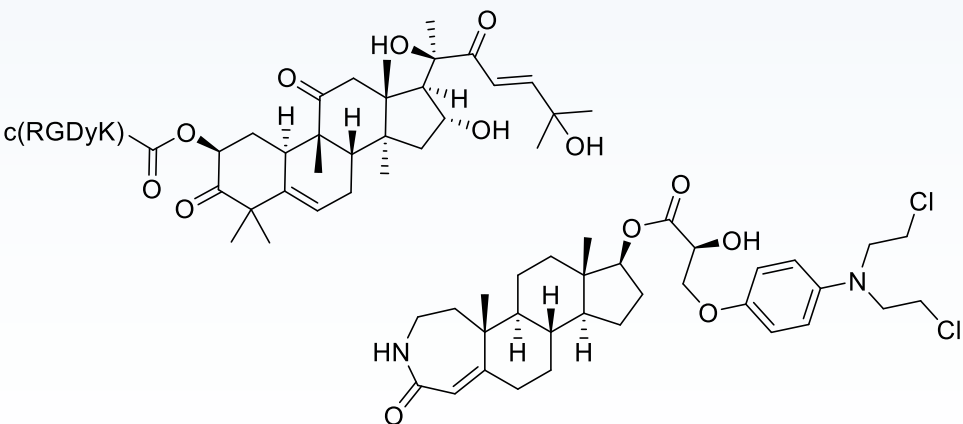
OPENSREEN GR



Research Interests:

- Development of new methods for the synthesis of bioactive compounds and compound libraries
- Design and synthesis small molecules and natural product modulators for the study of biological processes and the development of novel therapeutics.
- Synthesis of drug conjugates for targeted drug delivery in cancer therapy.
- Synthesis of novel drug modalities such as PROTACS.
- Coordination of OPENSREEN-GR compound libraries

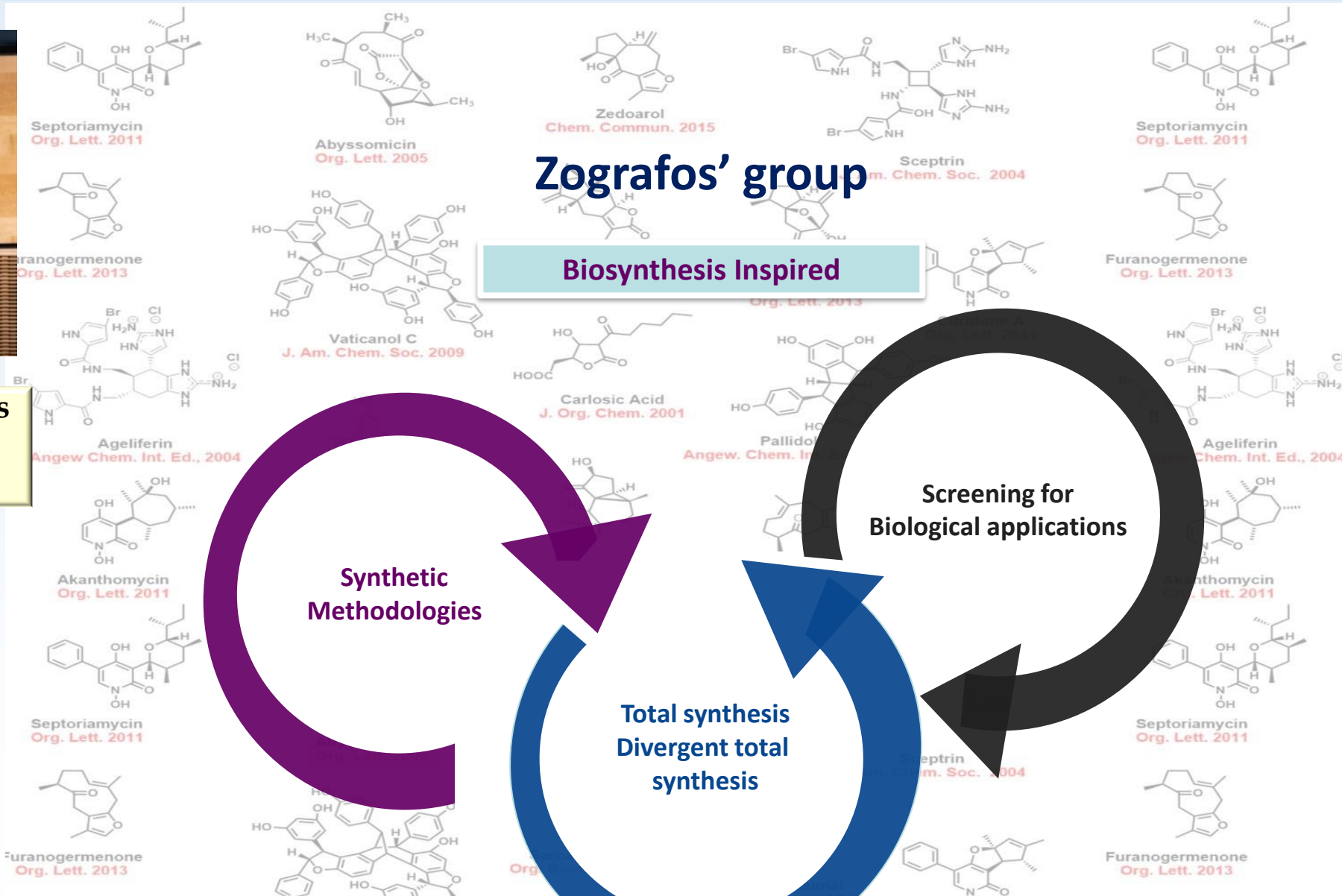
Vasiliki Sarli
Associate Professor of
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Laboratory staff



Alexandros Zografos
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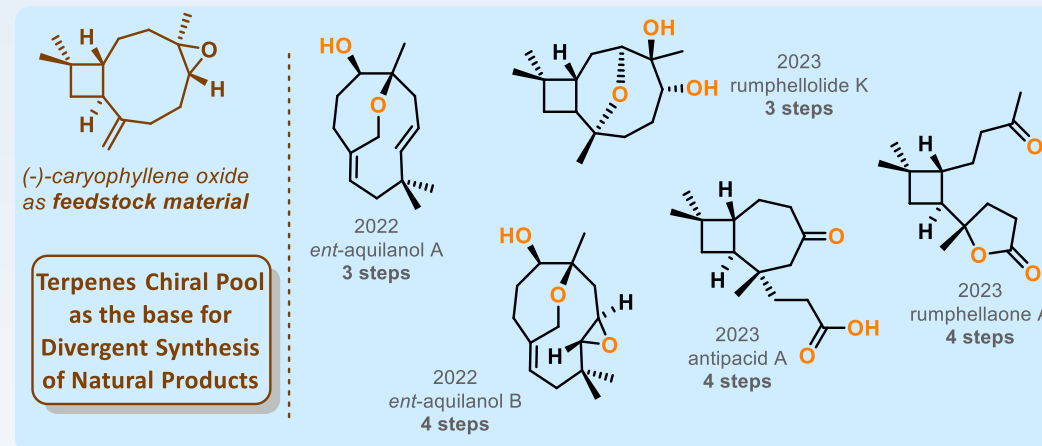


Research Interests

- Total synthesis of Natural Products and Macrocycles
- Synthetic methodologies in Organic Synthesis
- Glycosylation strategies
- Flow Chemistry in Organic Synthesis

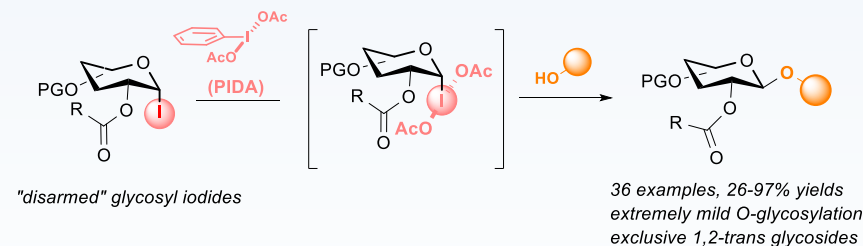
Representative Research

Total Synthesis of Natural Products

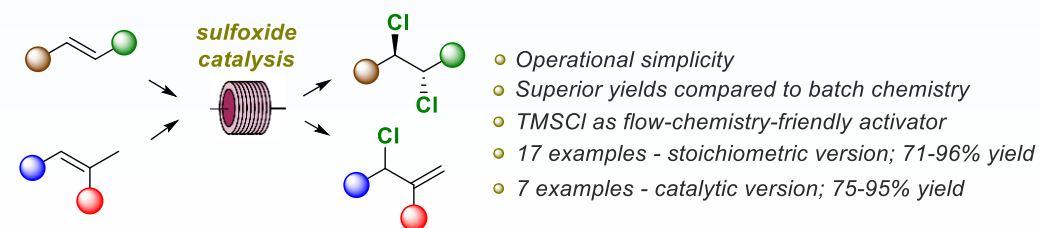


Synthetic Methodology

Glycosylation Chemistry



New enabling technologies/ Flow Chemistry



Thank you !

Special Collection

Organic Synthesis of Bioactive Molecules and Natural Products: A Focus on Greece

Guest Editors



Ioannis N. Lykakis
University of Thessaloniki



Alexandros L. Zografos
University of Thessaloniki

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