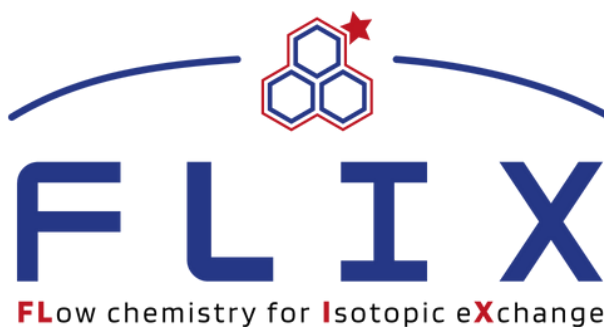




NEWSLETTER

Edito

Welcome to the final newsletter of the FLIX project. As we conclude this transformative journey that began on January 1, 2020, and comes to a successful close on June 30, 2024, we are excited to share the remarkable advancements we have made in the field of isotope chemistry. Throughout these years, our team has dedicated itself to push the boundaries of what is possible in isotope labeling. Imagine transforming the way we create isotope-labeled molecules by making the process faster, more efficient, and safer. That's precisely what FLIX has achieved. Our innovative approach, from developing new generations of catalysts to designing an advanced, automated flow chemistry system, is set to revolutionize fields ranging from synthetic chemistry to biomedical diagnostics and materials science.

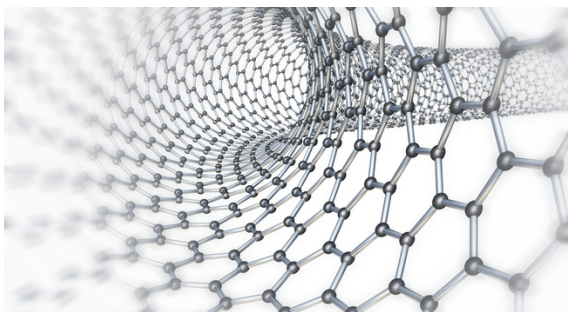
The FLIX project introduced a radically new concept for the ultimate-stage chemical isotopic labeling of high-value molecules such as drugs, biologics, and smart materials. By leveraging stable isotopes like deuterium, carbon-13, and nitrogen-15, we have designed catalysts and developed methodologies that streamline the labeling process, reduce chemical waste, and cut down production costs. Our modular FLIX machinery offers unprecedented efficiency in isotopic exchange, maintaining the integrity of complex molecules while enhancing their detection and analysis capabilities.

In this final edition, we will delve into the project's objectives and the key exploitable results, showcasing the transformative potential of our work. We highlight how our breakthroughs are set to impact scientific research and industrial applications worldwide.

Thank you for being a part of this incredible journey. Your support and collaboration have been crucial to our success. We look forward to seeing the continued impact and adoption of our innovations in the years to come.

Sincerely,
The FLIX Project Team

OUR OBJECTIVES



OBJECTIVE 1

Develop **new generations of organometallic catalysts** for isotope exchange reactions.

OBJECTIVE 2

Screen catalysts for the isotope exchange on a relevant portfolio of organic molecules in batch and flow chemistries and assess catalyst robustness.



OBJECTIVE 3

Devise and validate the '**combinable isotope labeling**' concept.

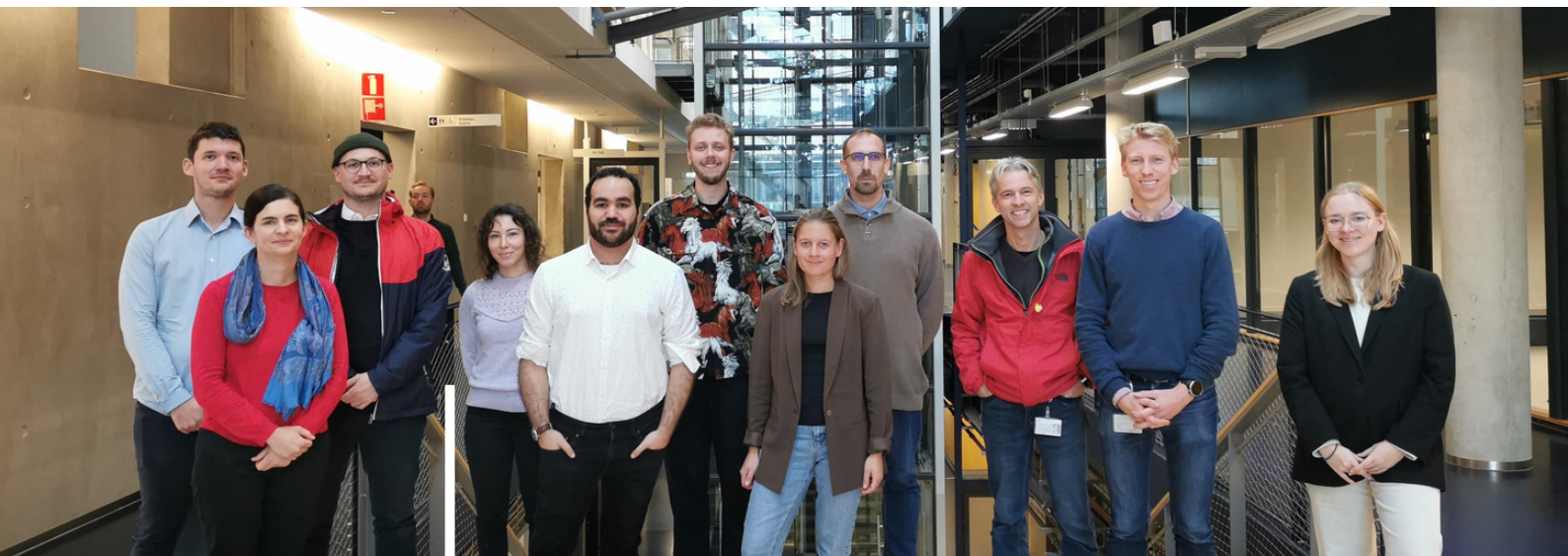
OBJECTIVE 4

Design and build an adaptable module machinery for combinable chemical exchange labeling.



DISCOVER OUR KEY EXPLOITABLE RESULTS

As the FLIX project comes to an end, we are excited to share the **important advancements achieved** through our collective efforts. Here are the key exploitable **results (KER)** that highlight the breakthroughs and **future potential** of our work.



KER 1: Development of New Generation of Catalysts (FLIX-CAT)

We have developed a new generation of catalysts working with hydrogen, carbon, and nitrogen isotopes. Traditional methods for isotopic substitution are often lengthy and produce a lot of waste, but our FLIX-CAT catalysts streamline this process. They allow for late-stage isotopic exchange, which means specific and selective substitution in complex molecules with fewer steps and less waste. This is particularly beneficial for drug development, diagnostics, and creating smart materials.

KER 2: Development of Safer Isotopic Sources



Our project has also focused on creating safer isotopic sources, making the isotope exchange process safer and more practical for industrial use. We developed new variants and protocols that reduce the risks associated with handling hazardous isotopic sources. These advancements will help accelerate drug development and foster new analytical methods, creating opportunities for researchers and boosting innovation in the pharmaceutical and biotech industries.

DISCOVER OUR KEY EXPLOITABLE RESULTS



KER 3: FLIX-BOX – Automatized Multi-Module Machinery

The FLIX-BOX is a significant leap forward in automated chemical synthesis. This adaptable machinery can perform both single-run and closed-loop reactions. By integrating machine learning, the FLIX-BOX optimizes synthetic pathways and conditions, making it a valuable tool for both existing and new isotope labeling processes. It promises to reduce development times and costs, making it highly valuable for pharmaceutical companies and research institutions.

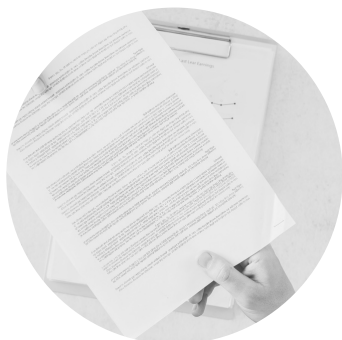
KER 4: Labeling of End-Use Molecules



We have also developed methods for labeling end-use molecules, which is essential in fields like pharmaceuticals, toxicology, and environmental science. Our new techniques for isotope exchange make the labeling process more efficient and less costly. This approach overcomes the limitations of traditional multistep synthetic methods and biochemical synthesis, providing a more straightforward and eco-friendly alternative. The improved availability of stable isotope-labeled compounds will support the development of new drugs diagnostic tools and applications in medicine and chemistry.

These key results demonstrate the FLIX project's commitment to advancing isotope chemistry and providing practical tools and methods for a variety of applications. We look forward to seeing these innovations adopted and further developed by our partners and the broader scientific community.

KEY NUMBERS



50
DELIVERABLES



3.5M€
BUDGET ENGAGED



9
PERSON FULL TIME

OUR PARTNERS



UNIVERSITY OF AMSTERDAM



AARHUS UNIVERSITY



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the European Union

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