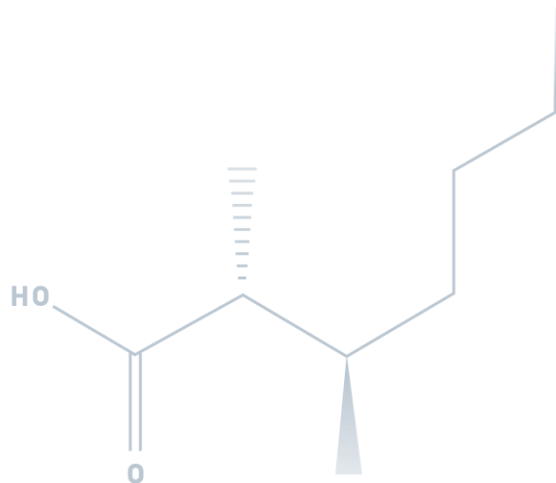




Fosters **IN**novative
competitiveness **C**hemoenzymatic
for a sustainable **InTE**grated
European **p**rocesses
chemical
industry



INCITE Overview



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European Union



*This project has received funding from the European Union's Horizon 2020
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PROJECT KEY FIGURES



52 months, from September 2019 to December 2023



Total cost: **€ 17.4 M**



European Union's Horizon 2020 Research and Innovation Programme contribution: **€ 13.3 M**

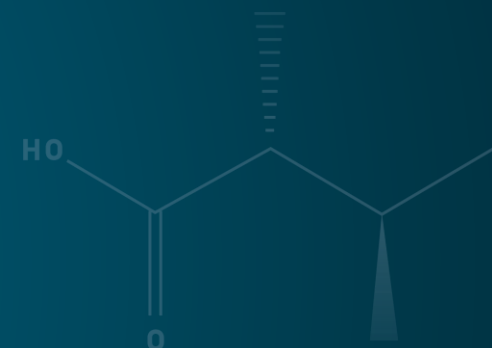
8 partners



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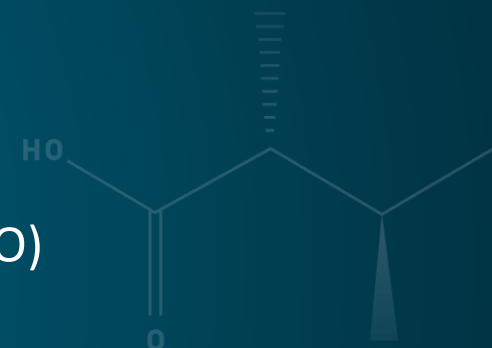
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A MULTI-STAKEHOLDERS PROJECT

It is a well-balanced group consisting of:

- 2 large/medium industries (**OLEON NV (Coordinator)**, ENDURA)
- 2 Research and Technology Organisations (IMM – Fraunhofer, VITO)
- 1 SME (BiCT)
- 1 Engineering Company (NextChem)
- 1 academic institution (Ghent University)
- 1 innovation cluster (Bioeconomyforchange, the French Bioeconomy Cluster)



oleon
a natural chemistry

vito

ENDURA
EXPLORING CHEMISTRY

BiCT
BIOTECHNOLOGY INNOVATION

Fraunhofer
IMM

GHENT
UNIVERSITY

BIOECONOMY
FOR CHANGE
ACTION & SUPPORT

NextChem
Maire Technimart for Energy Transition



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SPIRE
Sustainable Process Industry through
Resource and Energy Efficiency

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AMBITION

A SUSTAINABLE AND COMPETITIVE EUROPEAN CHEMICAL INDUSTRY

INCITE targets a successful introduction of continuous enzymatic process technologies in the European commodity and specialty chemical industry.

“**IN**novative **C**hemoenzymatic **INTE**grated Processes”

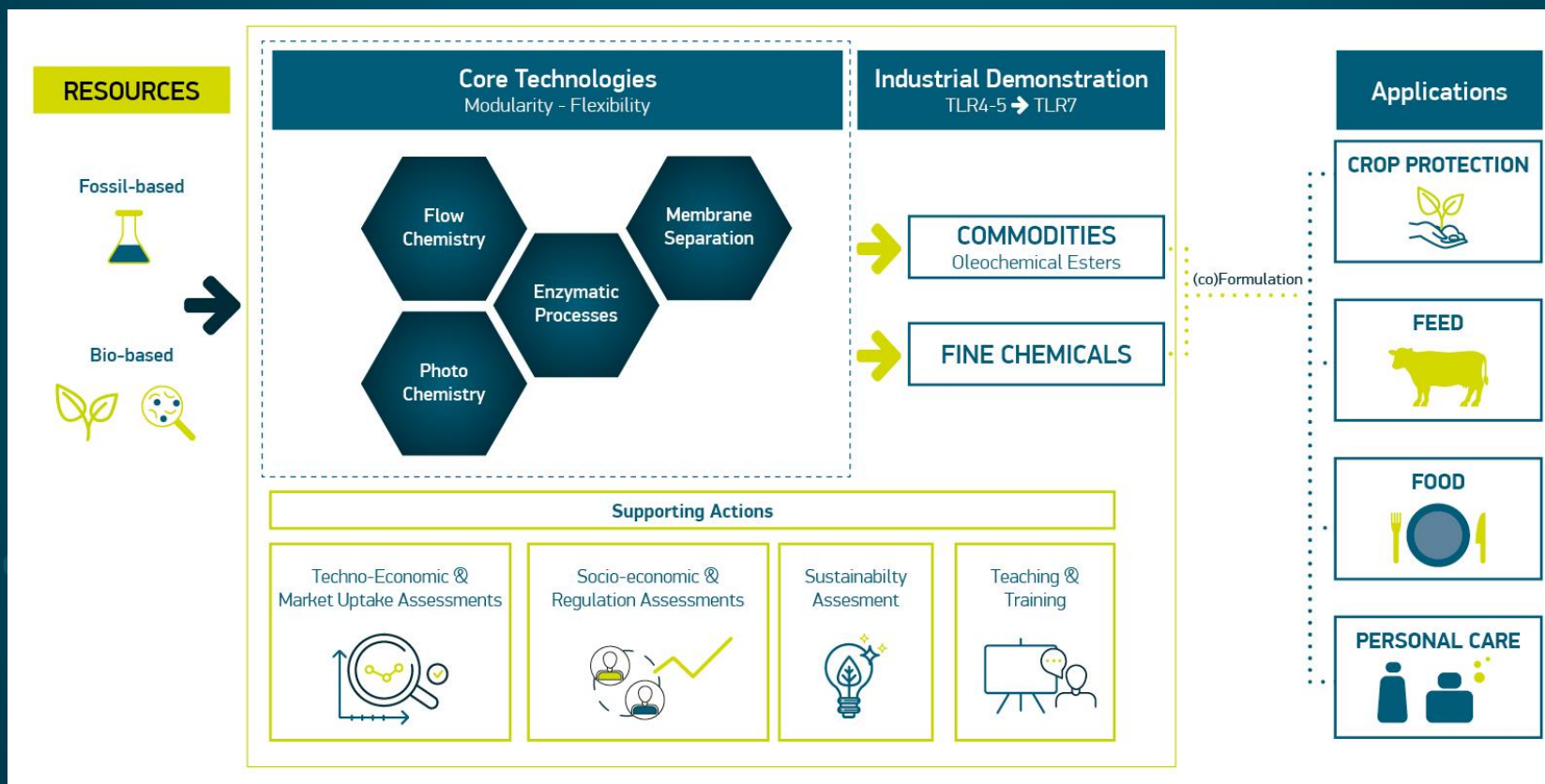


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APPROACH



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OBJECTIVES

CHEMO-ENZYMATIC PROCESSES AT AN INDUSTRIAL SCALE

INCITE will demonstrate the feasibility of **two chemo-enzymatic processes** using hydrolases:

- Esterase-catalyzed production of **agrochemical precursors**
- Lipase-based solvent-free synthesis of **oleochemical esters**



CROP PROTECTION



FEED



FOOD



PERSONAL CARE



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EXPECTED IMPACTS

BUSINESS CASE FOR DEMO 1

- **Insecticides for household and public health applications**
 - More active (6-10 x), less toxic than the reference
 - Extension of the INCITE technology to the synthesis of insecticides from other precursors
- **Selective enzymes with chiral selectivity**
- **Benefits for insecticide precursors & enzymes expected to reach a total €14,6 million by year 2030**

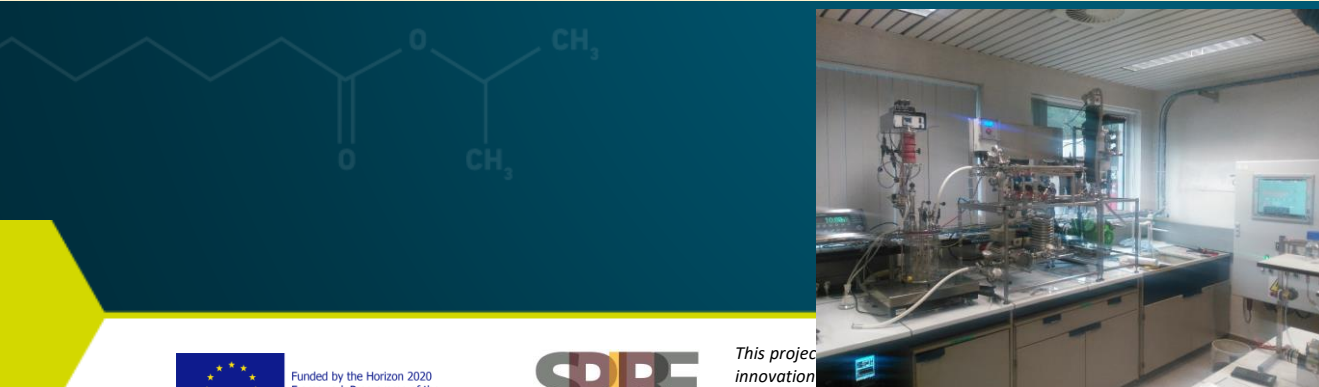
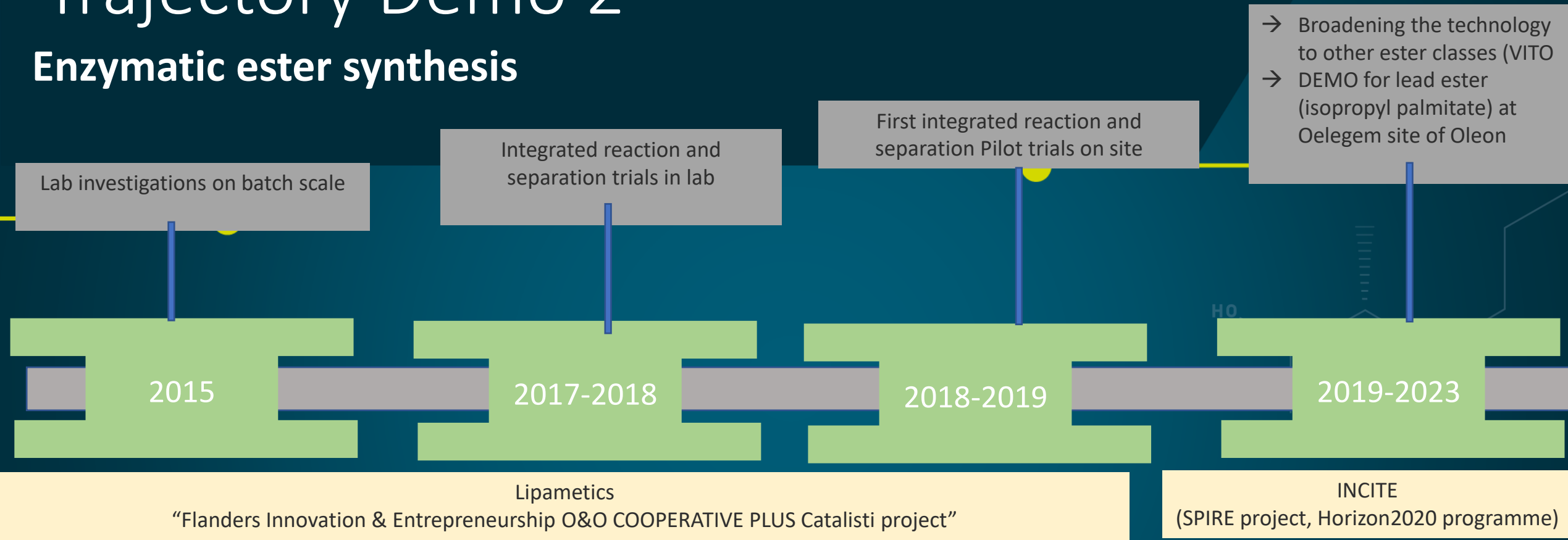
EXPECTED IMPACTS

BUSINESS CASE FOR DEMO 2

- Enzymatic esters with **improved quality and environmental profile** are expected to boost market uptake
- Technology expected to be extended for the production additional esters for different markets from 2025 to 2027
 - Health & Beauty – Food – Other functional ingredients
- **Benefits for the range of enzymatic esters expected to reach a total €38,5 million by year 2030**

Trajectory Demo 2

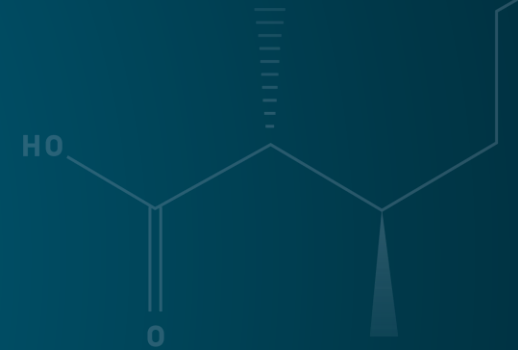
Enzymatic ester synthesis



KPI & CONTRIBUTION TO P4PLANET OBJECTIVES

CHEMO-ENZYMATIC PROCESSES AT AN INDUSTRIAL SCALE

- Increased productivity, yield and product purity
- Decrease in CAPEX and OPEX by 10-50%
- Increased process safety
- Resource and energy efficiency gains by 40-60%
- Greenhouse gas emissions: min 20% and up to 75% decrease compared to conventional processes



INCITE progress

- Optimisation of key processes completed at lab scale
- Demo plants being assembled on both sites, completion expected for the start of first demo activities in S2/22
- Knowledge transfer and life cycle assessment activities started
- Communication activities: INCITE website, webinars and social media
- Set of 10 training modules on INCITE key technologies and activities



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INCITE MOOCs

The screenshot displays the INCITE Academy website interface. At the top, the URL is <https://academy.capture-resources.be/collections?category=incite>. The navigation bar includes 'CAPTURE Academy' and menu items for 'ALL COURSES', 'WATER', 'CO2', 'INCITE', 'WORKSHOPS', and 'SIGN IN'. The main heading is 'Courses', with sub-navigation for 'ALL COURSES', 'CO2', 'INCITE', 'WATER', and 'WORKSHOPS'. A search bar is located on the right. The course grid consists of six items, each featuring the INCITE logo and 'CHEMO-ENZYMATIC PROCESSES' text. The courses listed are:

- Oleo chemical Plant operation - DUT (41 Lessons, Free)
- Oleo chemical Plant operation - ENG (41 Lessons, Free)
- Intensified synthesis of esters using enzymes and membrane technology - Under construction (19 Lessons)
- Biocatalytic chiral amine synthesis: process intensification using membranes - Under construction (22 Lessons)
- An introduction to enzymes - Under construction (28 Lessons)
- Life Cycle Assessment in the chemical industry - Under construction (23 Lessons)



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Thank you
Questions?

dr. Yamini Satyawali – yamini.satyawali@vito.be



www.project-incite.eu



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[INCITE Project](#)



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