

TECHNOLOGY OFFER

Process for the photocatalytic oxidation of alkanes and aromatic hydrocarbons

In the industry, as well as in the primary sector, the produced by-products can be processed to develop alcoholic compounds of high commercial value. However, current methods for this process are expensive and have low efficiencies. To solve that, the present technology allows the conversion of alkanes, alkyl fragments and alkenes to alcohols using only water, oxygen/air, ultraviolet light, and a recoverable metal catalyst (Bor-Cat). The process is performed in a single step, with a high production efficiency of between 90 to 99%, which is much higher than current techniques. The dimensions and uses of the photoreactor can be adapted to specific demands, particularly in the environmental, energy, and industrial synthesis sectors.



COMPETITIVE ADVANTAGE

- Adaptable, ecological, efficient, fast, and inexpensive process
- No need for high pressures and/or temperatures or contaminating reagents.
- Water as a solvent and solar radiation as an energy source.

OBJECTIVE MARKET

- Water treatment plants.
- Chemical, pharmaceutical, vet and energy industries.
- Agricultural and livestock sectors.

POTENTIAL APPLICATIONS

- Production of biofuels (like biomethanol).
- Production of alcohols or phenols for direct use and/or subsequent synthesis like polymers, pharmaceuticals, personal care, and vet products.
- Industrial, agricultural, and urban wastewater purification.
- Valorisation of organic and agricultural wastes.

ROADMAP / TIME-TO-MARKET

- Proof of concept project FATPORCA (2021 – 2023)
- Patent filing EP23382576.9 (2023)
- Pilot plant (2025)

RESEARCH GROUPS

Laboratory of
Inorganic Materials
and Catalysis
ICMAB – CSIC

Research Group in
Analytical and
Environmental
Chemistry (Research
line: Sustainable and
environmental
catalysis)
University of Girona

TRL – 4
In Development

CONTACT

Unitat d'Innovació i
Transferència de l'RDI

Oficina Tècnica de
Recerca i Transferència
(OTRIT)

–
UdG

transferencia@udg.edu
+34 972 41 81 47