

# Catalysts for new polyolefin synthesis

Chemistry / Process / Materials / Thermoplastics



## REFERENCE

ZN-Fe [L1345]

## KEYWORDS

OLEFIN / THERMOPLASTIC /  
POLYMERIZATION / PE / *iso*PP /  
HETEROGENEOUS CATALYSIS



## APPLICATIONS

- Polyolefin production, for various applications:
  - Soft and hard packaging
  - Plastic films
  - Profiles (building)
  - Coatings...



## TARGET MARKETS

- Plastics industry
- Chemistry
- Petrochemistry

## Technology readiness level

TRL 3-4



## INTELLECTUAL PROPERTY

- Priority patent application FR1551954, extended in EP, US, JP, CA

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## DESCRIPTION

The technology concerns new heterogeneous iron-based catalysts for the improved synthesis of thermoplastic polyolefins (eg: high density (HDPE) or linear low density (LLDPE) polyethylene, isotactic polypropylene *iso*PP). These base materials are present in most of the plastic products of our everyday life. Compared to classical heterogeneous processes (Ziegler-Natta, Phillips), these catalysts give access to new polymers and copolymers, from a wider range of monomers, including polar olefins. The physical characteristics of polyolefins can be modulated on a customized basis, and the materials' sustainability is increased.

## COMPETITIVE ADVANTAGES

- Catalysts suitable for standard polymerization processes
- Wider range of monomers' compatibility vs Ziegler-Natta-Titanium (ZN-Ti)
- Iron-based system: cheaper and more sustainable than Titanium-based catalysts

## DEVELOPMENT STATUS

- Monomers compatible for (co)polymerization:
  - ethylene, propylene, 1-hexene, styrene, butadiene
  - towards polar vinyl monomers and functionalities
- Speciality polymer: UHMWPE (ultra-high molecular weight PE), with high linearity and high  $T_f$  (>137°C)

## PARTNERSHIP

PULSALYS is looking for co-development or commercialization / licensing industrial partners.



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