

Light chemicals reforming route combining plasma
and heterogeneous catalysis technology operating
with renewable energy

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NMBP24 – Catalytic transformation of hydrocarbons (RIA)



MateriaNova
MATERIALS R&D CENTRE

Materia Nova R&D center

INTERNATIONALLY RECOGNISED EXPERTISE

- Energy-efficient near-atmospheric plasma-based treatment of gaseous (μ -wave, torch ...)
- Design of efficient catalysts activated by plasma technology
- Tailored functional coatings onto powders (e.g. heterogeneous and photo/catalysis)
- Plasma diagnostics (OES, LIF/TALIF, mass spectrometry ...)
- Life Cycle Assessment (LCA) and Life Cycle Costing (LCC) design

INDUSTRIAL PROJECTS RELATED TO THE TOPIC

➤ REFORGAS

➤ GAZTON

➤ H2S2H2

PAST EXPERIENCE IN EU-FUNDED PROJECTS

➤ MATCHING (H2020)

➤ AIT2De (Cornet)

➤ METSPRAY (Beware)

➤ SMS (H2020)

➤ OPP3D (Cornet)

➤ CHOPIN (H2020)

➤ METAPLAST (Cornet)





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PROJECT IDEA

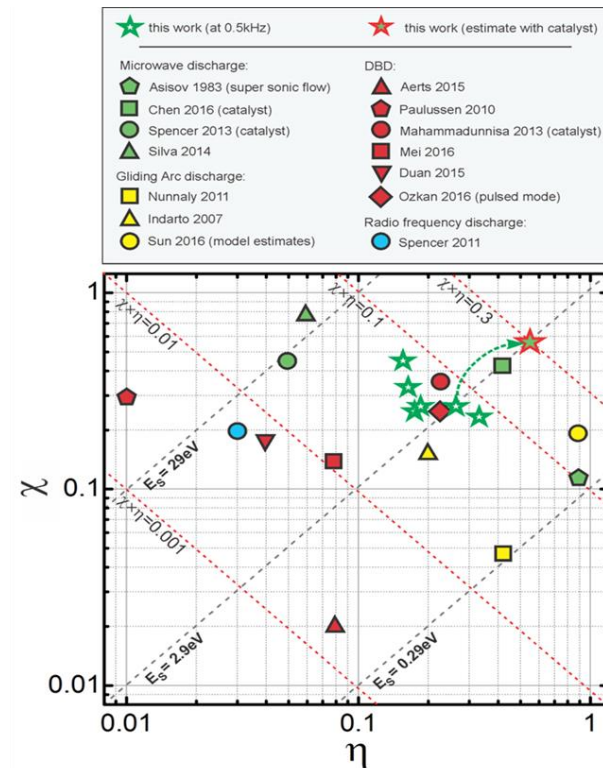
Development of performing plasma/catalytic reforming technology integrating renewable electricity to valorize light chemicals

✓ Existing :

- Proof-of concept at lab. scale reactor (TRL 3-4)
- Plasma diagnostic expertise
- LCA data

✓ Targets : Technology validation in relevant environments (e.g. bio-gaz/CH₄ to high-value chemicals/ fuels)

- New reactor design operating at atmospheric pressure
- Improved efficiencies and selectivity
- Supply & Value chains definition with industrial key-players
- LCC technology design and LCA



Study of CO₂ dissociation with various process including Materia Nova technology (★ and ★). Improved used power and chemical conversion efficiencies.

alcanes ...



Consortium

Known partners / Competence offer

Name	Type	Country	Role in the project
Materia Nova	R&D center	Belgium	Development of an upgraded plasma/reforming process (TRL 5-6)
Bio-based chemical producer	Industrial	Belgium	Tailored bio-gas enabling efficient plasma-reforming

Partner search

Profile	Type	Country	Role in the project
COORDINATOR			
Oil-based chemical producer	Industrial	EU	Expertise in oil-based chemicals Valorisation and market identification
Expert in Catalysis	R&D Center		Development of new tailored catalysts
Green energy producer / distributor	Industrial	EU	Expert in the integration of renewable energy in the process and value-chain



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Thank you for your kind attention!

OTHER PROPOSALS
CE-SPIRE-02-2018: Processing of material feedstock using non-conventional energy sources
CE-SPIRE-03-2018 : Energy and resource flexibility in highly energy intensive industries