

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

Fabrizio Maseri & Thomas Godfroid

**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 ( $\mu$ -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)





# PROJECT IDEA

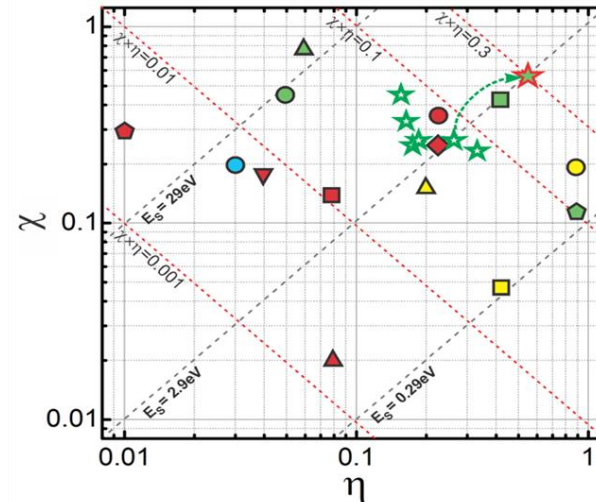
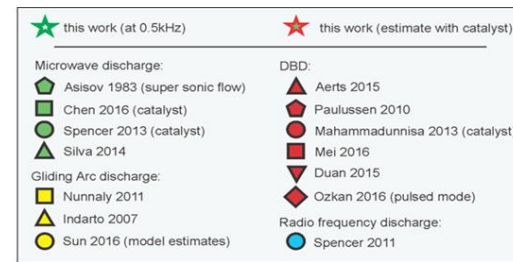
## Development of performing plasma/catalytic reforming technology integrating renewable electricity to valorize light chemicals

### ✓ 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/CH<sub>4</sub> 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 CO<sub>2</sub> dissociation with various process including Materia Nova technology (★ and ★). Improved used power and chemical conversion efficiencies.



# 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
<b>COORDINATOR</b>			
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



## Contact details

Contact person	Fabrizio Maseri
Organisation	Matera Nova Materials R&D center
Adress	Avenue N. Copernic, 1, 7000 Mons, Belgium
Phone nr	+32.65.55.49.27
E-mail	Fabrizio.maseri@materianova.be

Thank you for your kind attention!

**CE-SPIRE-02-2018: Processing of material feedstock using non-conventional energy sources**

*Other proposals*

**CE-SPIRE-03-2018 : Energy and resource flexibility in highly energy intensive industries**