



#InvestEUresearch

Horizon 2020 Work Programme for Research & Innovation 2018-2020

EMRS Event
Strasbourg 20th June 2018

Workshop: Europe in Motion-EUMAT Session
Time: 13:45-16:10
Proponent: UNINOVA
Proposal title: Cobalt substitution toward „greener“ green vehicles

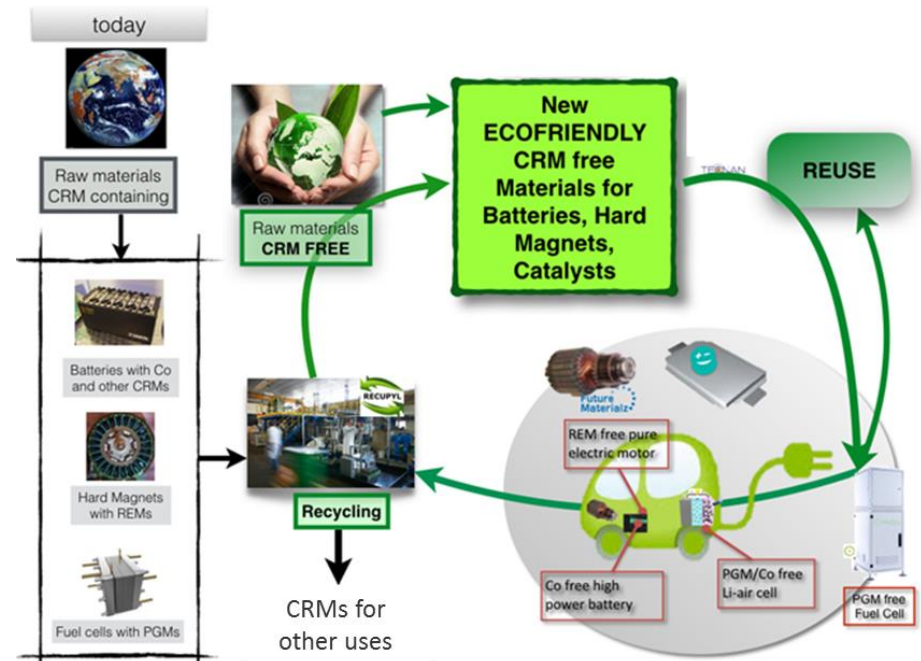
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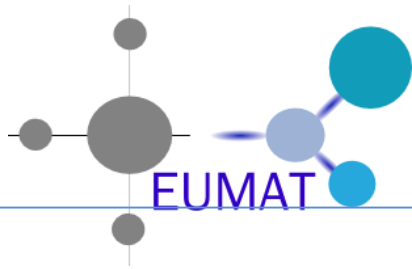
Research and
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Cobalt substitution toward „greener“ green vehicles

- **Goal: Eliminating/reducing amount of CRMs (namely cobalt) used for rechargeable batteries and magnets necessary for manufacturing electric vehicles (EV). Develop different approaches to recycle CRM essential to Electric Vehicles:**
 - Cobalt free high performing Lithium-ion batteries (Critical Element)
 - Synthetic Graphite for aqueous binders as Anodes for Li-ion batteries (CRM), combined with TiO₂ based anodes for high power Li-ion batteries (improved stability)
 - Cobalt and Neodymium free hard magnets for electric Motors and Generators (REMs)





Cobalt substitution toward „greener“ green vehicles

- **Outcomes:**

- **new materials** for reducing the use of **Co, REM**, based on **abundantly available elements** (Fe, Ti, Mn) and **carbon** derived from synthetic graphite to be used in **electric vehicles**
- advanced **synthesis and processing** routes for the production of these materials, using innovative but consolidated techniques, up to the **scale up** in pilot plants
- innovative **products** for electrochemical storage applications, hard permanent magnets
- **recycling**: already existing exhausted batteries and hard magnets materials can be **fully recovered in pyro and hydrometallurgical pre-industrial plants**

- **Partners already identified:**

Leuven, UNL, Arkema, CEA; Fraunhofer, POLITO,

- **Wanted additional partners :**

Others with the expertise identified above and some partners on standardization and safety issues, compliance to EU/National legislation vs the targeted market