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# REDHY

## Redox-Mediated economic, critical raw material free, low capex and highly efficient green hydrogen production technology

# REDHY - Deliverable report

## D5.1 - Heterogeneous catalysts development

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# Public Summary

The aim of the project is to develop a proof of concept for an innovative water electrolysis technology featuring a high-performance, stable, and efficient single cell utilizing redox mediators and external heterogeneous catalysts for $O_2$ and $H_2$ evolution; validate robust, high-throughput electrochemical processes that incorporate bipolar membranes, redox mediators, heterogeneous catalysts, and advanced high surface area electrodes, all designed with non-critical raw materials.

In particular, for the development of heterogeneous catalysts, the activity concerns the demonstration of their effectiveness in the regeneration of redox mediators, favouring the evolution of hydrogen and oxygen. In Deliverable 5.1 titled “Heterogeneous catalysts development” a first screening of different heterogeneous catalysts developed at CNR was presented. All catalysts based on non-critical raw materials were synthetized by co-precipitation and hydrothermal processes and analysed by physico-chemical and electrochemical characterizations.

# 5 Acknowledgement

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| Participant No. * | Participant organisation name | Short Name* | Type | **Country** |
|---|---|---|---|---|
| 1 (Coordinator) | Deutsches Zentrum fur Luft – und Raumfarht EV | DLR | RTO | DE |
| 2 | Centre National de la Recherche Scientifique | CNRS | RTO | FR |
| 3 | Uniresearch B.V. | UNR | SME | NL |
| 4 | Universitat Politecnica de Valancia | UPV | HES | ES |
| 5 | Industrie De Nora S.p.A. | IDN | IND | IT |
| 6 | Cutting-edge Nanomaterials CENmat UG | CENMAT | IND | DE |
| 7 | Consiglio Nazionale Delle Ricerche | CNR | RTO | IT |

*IND-Industry; SME-Small and medium enterprise; RTO-Research organization; HES-Higher Educational Establishment

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