

Hydrogen-related activities at the University of Milano-Bicocca

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Main Players in the topic



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Department of Materials Science



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MAIN COMPETENCES AT UNIMIB

Anion exchange Membrane (AEM) and Proton Exchange Membrane (PEM) research, development and characterization:

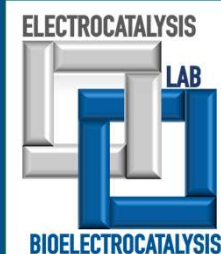
- New Ionomers;
- New Polymeric chemistries;
- Tuning of the properties.

Electrocatalyst synthesis, testing and characterization for a plethora of reactions:

- Oxygen reduction reaction (ORR) – PGM-free
- Hydrogen Evolution Reaction (HER) – PGM-free or low PGM
- Oxygen Evolution Reaction (OER) – PGM-free

Fuel Cells and Water Electrolyzers:

- Integration of components and testing



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OTHER RELATED COMPETENCES

Electrocatalysis

- Ultra low IrOx OER
- CO₂RR
- NO₃RR
- Urea electrosynthesis
- Microbial Fuel Cells
- Microbial Electrolysis Cells

Other activities

- Plastic to Fuel/Syngas
- Plastic upgrading
- Biochar
- Biochar to bacteria interaction
- CO₂ to methanol
- Bioelectrochemistry



FACILITIES AT UNIMIB

ELECTROCHEMISTRY

Rotating Ring Disk Electrode facilities

Membrane Electrode Assemblies Fabrication

Fuel Cell Test Station

Electrolyzer Test Station

CHARACTERIZATION

SEM, TEM, XRD, XRF, Raman, FTIR, NRM, membrane thermal analysis, rheology, mechanical analysis

PROJECTS AT UNIMIB



(PROJECT WE-CAT) Development of PGM-free Electrocatalysts for AEM and alkaline electrolyzers (2023-2024)
Bilateral Israel-Italy 2023-2024



(PROJECT AMPERE) Development of PGM-free and F-free materials for AEM fuel cells & electrolyzers (2020-2023)



(PROJECT PERMANENT) Development of improved membrane electrode assemblies in PEM fuel cells (2023-2026)



Mapping of hydrogen refueling station within the Alpine Region (2023-2026)
SUBCONTRACTOR



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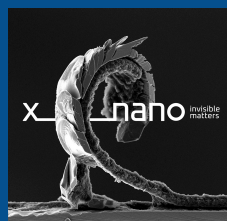
PROJECTS AT UNIMIB



Joint doctorate on developing materials for electrolyzers and electrolyzers integrations into hard to abate industrial sector. (2023-2025)



(PROJECT TESLA) Development of PGM-free Electrocatalysts for AEM fuel cells and electrolyzers starting from waste plastic (2023-2025)



Two doctorate funded on the development of PGM-free Electrocatalysts for AEM electrolyzers (2024-2026)



Development of PGM-free Electrocatalysts for AEM electrolyzers and their integration in Membrane electrode assemblies (2023-2025)



Piperanion – PNRR partenariato NEST Spoke 4

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Collaborators (past 3 years)





H₂ERE NETWORK
Hydrogen Energy Research and Enterprise network

Per individuare il laboratorio affine alle proprie necessità è possibile procedere navigando la mappa interattiva che indica l'ubicazione dei diversi enti, oppure inserendo nella barra di ricerca una o più parole chiave legate all'ambito di applicazione o alle caratteristiche specifiche del progetto. È inoltre possibile filtrare la ricerca restringendola esclusivamente ai campi tematici desiderati spuntando le caselle riferite ai singoli elementi elencati.

RICERCA TESTUALE

Premi Invio per cercare

PRODUZIONE

- ☐ Elettrolisi
 - ☐ ALK
 - ☐ AEM
 - ☐ PEM
 - ☐ SO
 - ☐ Altro
- ☐ Altri metodi di produzione
 - ☐ Reforming combustibili fossili con CCS
 - ☐ Steam reforming del biogas
 - ☐ Gassificazione rifiuti e biomassa
 - ☐ Pirolisi
 - ☐ Produzione biologica
 - ☐ Fotocatalisi tramite CSP
 - ☐ Altro

STOCCAGGIO, TRASPORTO, DISTRIBUZIONE

- ☐ In superficie
 - ☐ Serbatoi di stoccaggio
 - ☐ Idruiri metallici
 - ☐ Altro
- ☐ Nel sottosuolo
- ☐ H₂ in rete
 - ☐ Blending con gas naturale
- ☐ Vettori liquidi
 - ☐ Liquefazione
 - ☐ Vettori liquidi organici (LOHC)



Scopri la
piattaforma
H2ERE!

Per maggiori
informazioni consultate
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piattaforma H2ERE
Network!

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Evento Business to Research, 20 settembre 2024