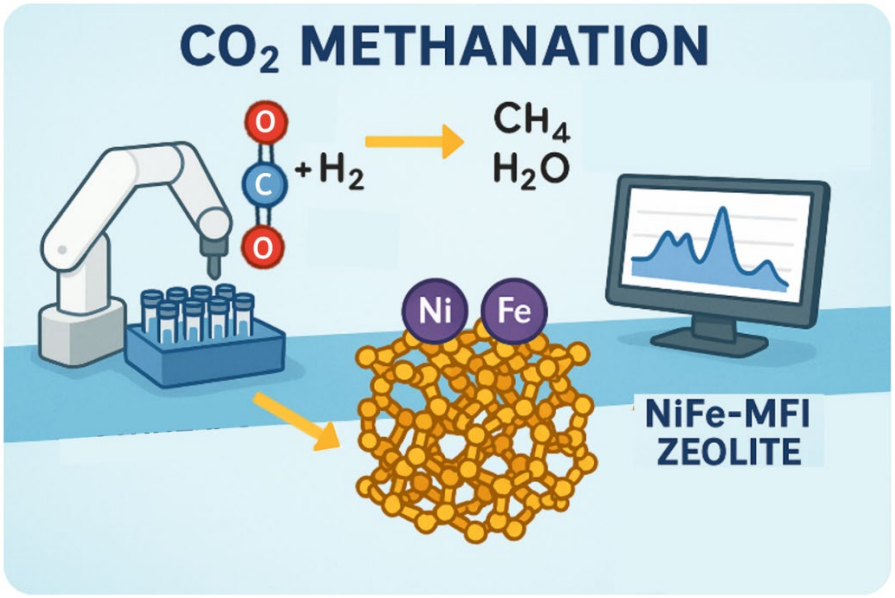
Nom : BIZECO2

Sous-titre : Bimetallic-Zeolite materials for CO2 methanation

Financeur : LABEX EMC3-2025 Jeunes chercheurs

Dates de début et de fin : 01/01/2025 au 31/12/2025



footer note : Financé à hauteur de 20000€ par LABEX EMC3-2025

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résumé projet :

Cost efficient and long-term stable catalysts are in great demand for the **CO_2 hydrogenation to methane and C2 compounds**, a key process in CO_2 conversion into useful chemicals and fuels. Ni supported on oxides appear as promising catalysts for this reaction but still suffer from low activity at low temperature (< 300 °C) and fast deactivation. The **BIZECO2 project** falls within this context and aims to develop new catalysts containing **specific bimetallic NiFe active sites** promoting CO_2 activation. Recently, the development of a new methanation catalyst concept based on the synthesis of Ni-doped ceria nanoparticles containing Ni ionic sites enabled to obtain a very high specific activity for the desired reaction. The aim of this project is to further develop this concept by verifying whether this is a more general trend that could be applied to other types of oxides. **Metal-containing zeolites**, important inorganic crystalline materials owing to their adsorptive and catalytic properties, are positioned to significantly contribute to the achievement of these goals. Recently, specific synthesis protocols allowed to directly insert a wide range of heteroelements within zeolite framework offering the possibility to apply it to bimetallic systems. We therefore propose the synthesis using **high-throughput automated system, advanced characterization and catalytic evaluation of NiFe-MFI nanozeolites for CO_2 methanation.**