



A novel, more efficient catalyst to obtain methanol from carbon dioxide

THE INVENTION

A biochar-supported CuZnO catalyst for the transformation of CO₂ to methanol through a hydrogenation reaction, providing a more efficient, sustainable and cost-effective alternative to the aluminum-supported industry standard.

Innovative aspects and advantages

- **More efficient:** methanol production (measured as space time yield) with our proposed catalyst was roughly 6.2 times higher than with the aluminum supported commercial alternative.
- **High stability and selectivity:** activity was almost completely maintained after more than 40 hours while selectivity remained high (81.8%), both surpassing the commercial alternative.
- **A sustainable and inexpensive support:** biochar is a biodegradable and cheaper alternative to aluminum and other metal oxide supports.
- **Potential further applications** for the obtention of other renewable fuels from CO₂ are being explored.

IP Rights

- Patent application EP24180709.8 with priority date 07/06/2024.

Summary

Carbon dioxide capture and storage (CCS) and its chemical transformation are crucial for mitigating CO₂ emissions from fossil fuels, addressing a major global concern. The transformation of carbon dioxide into methanol through hydrogenation has been of great interest, given its applications as a fuel and in the manufacture of industrial chemicals. However, this reaction requires very stringent conditions and there is a need for further catalysts showing improved yield and higher selectivity.

Researchers from UAB have developed a novel catalyst using biochar as a support, a charcoal obtained from the pyrolysis of biomass with porous nature that facilitates the dispersion of CuZnO nanoparticles, opening the door to a more efficient and cost-effective obtention of renewable methanol.

Market

- Renewable methanol market was valued at USD 196.8 million (2022) and is expected to reach USD 390.14 million by 2031, growing at a CAGR of 7.9% in this period (Source: Skyquest).
- The CO₂ utilization market is estimated at USD 4.02 billion (2022) and is expected to reach USD 14.32 billion by 2032, growing at a CAGR of 13.60% (Source: Precedence Research).

We are looking for

A partner interested in a collaboration and license for commercial exploitation.

Scientific Team

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