UNIVERSITY OF WYOMING
RESEARCH PRODUCTS CENTER

Diethyl Oxalate Catalyst for Ethylene Glycol Production

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Patent Status:
No Patent

Description of Technology

Ethylene glycol (EG) is a crucial raw material with high global demand and is mostly produced using petrochemical technology. However, the cost of this production is relatively high and strong acids or alkalis are necessary for traditional methods which can cause severe corrosion to equipment and environmental problems. Coal to ethylene glycol, is a potentially green production approach, but is challenging to achieve high industrial production levels due to poor catalyst performance. Therefore, high performance catalysts and a more sustainable production process of ethylene glycol is important to the industry.

Researchers from the University of Wyoming have discovered a highly efficient nanocatalyst for the preparation of diethyl oxalate (DEO), an intermediate compound in EG production that uses carbon monoxide (CO) from coal syngas rather than petroleum products. The nanocatalyst is highly stable with the addition of cerium oxide (CeO_2). Research showed that the high CO conversion and high selectivity of DEO could be maintained up to 72 hours without visible decrease.

Applications

This highly efficient and stable nanocatalyst may have a promising industrial application for coal to ethylene glycol production.

Features & Benefits

- Highly efficient
- Highly stable (42 times longer activity rates than historic reports)
- Contributes to sustainable ethylene glycol production

Market Opportunity

This catalyst could improve the overall production of ethylene glycol by using a more sustainable approach. Ethylene glycol is mainly used as an antifreeze agent for automobiles or deicing solution for aircraft and boats.

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