



Catalytic direct extraction of valuable products from coal with CO₂

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Patent Status:
Patent Pending

Description of Technology

Coal is currently primarily used as a solid fuel for electric power generation and heat through direct combustion. With a rapidly increasing demand for liquid transportation fuels, along with a dwindling reserve of easily recoverable petroleum resources, coal conversion to clean liquid fuels and valuable chemicals has attracted world-wide attention. Low-rank coals, especially lignites, account for more than 40% of the world's total coal reserves.

In the past, organic solvents, such as methanol, ethanol, and toluene, have been used as solvents for supercritical extraction of coals. Supercritical CO₂ has been widely used as a green and effective solvent for various chemical reactions, but is rarely used in coal extraction to produce valuable chemicals. Researchers at the University of Wyoming have developed a catalytic process for direct extraction of valuable products from coal with CO₂. With this technology, supercritical CO₂ extraction of low-rank coals is conducted on a high temperature and pressure reactor equipped with a CO₂ pump.

Applications

Supercritical extraction can be a promising approach to extract valuable chemicals from low-rank coals.

Features & Benefits

- Produces less CO₂ than the current use of coal for solid fuel
- Less expensive and better for the environment than current organic solvents being used for supercritical extraction
- Potential for producing valuable chemicals
- New uses for coal

Marketing Opportunities

Supercritical CO₂ extraction is a new innovative technology in the energy industry and could have both environmental and economic benefits for our current society and its needs.

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