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Patent(s) Issued

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Available Technologies

Stabilization of Nickel Metal Catalysts for Aqueous Processing Systems

SUMMARY

Supported nickel metal catalysts can be used in aqueous processing systems for steam reforming, methanation, and hydrogenation—most prominently, hydrothermal gasification used to convert organic matter in water to medium BTU fuel gas—with activity over a range of temperatures from 200°C to 450°C. However, these catalysts lose activity over time and must be replenished with new supports to continue facilitating the desired chemical reactions.

Ruthenium has been used as a catalyst; however, it is significantly more expensive than either copper or silver stabilized nickel. Although a copper or silver stabilized catalyst is less long-lived than a ruthenium catalyst, it provides a less expensive alternative.

ADVANTAGES

- * Less expensive type of catalyst using copper and silver in place of ruthenium
- * Longer-lived than nickel catalysts alone
- * Ability to use renewable biomass feedstock in aqueous environments
- * Brings efficiency, thus cost-effectiveness, to processing systems through fewer interruptions from the clogging issues common to biomass feedstocks

STATE OF DEVELOPMENT & AVAILABILITY

Ready for commercial production

Patents & Intellectual Property

- » Patent #: 5,977,013
- » Patent #: 6,152,975

Technology Portfolio(s)

- » Chemical Processing and Catalysis

Potential Industry Applications

- » Agriculture & Mining
- » Chemicals
- » Energy & Utilities
- » Food, Beverage & Tobacco
- » Oil & Gas
- » Wood, Paper & Forestry

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