Zinc(II) and Gallium(III) Catalysts for Olefin Reactions

High-temperature, robust catalysts enable compact plants and simpler, single-temperature routes from light alkanes to fuel-range products.

Researchers at Purdue University have developed novel Zinc (II) and Gallium (III) catalysts, for olefin (ethylene and propylene) oligomerization reactions. These heterogeneous catalysts are stable and highly active at temperatures up to 600 Ã¢â€ Â°C, whereas typical catalysts for olefin oligomerization are only performed around 150 Ã¢â€ Â°C - 250 Ã¢â€ Â°C. The reaction products are suitable for production of high performance diesel fuels. Furthermore, since these catalysts operate at higher temperatures, this allows for higher productivity, thus smaller scale plants. These new catalysts are under development for conversion of shale gas to transportations fuels. Since the production of olefins occurs at temperatures above 500 Ã¢â€ Â°C, it is possible that these catalysts will allow for direct conversion of low molecular weight alkanes, e.g., ethane and propane, to fuel range products in a single step. Currently, olefins are produced at a much higher temperature than where they react to products. A single temperature catalyst and process would significantly lower the overall process cost.

Advantages:

-Operates at high temperatures

-Highly Stable

-Simplified Process

Potential Applications:

-Catalyst

TRL: 4

Intellectual Property:

Technology ID
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Category
Chemicals & Advanced Materials/Specialty & Performance Chemicals
Semiconductors/Packaging & Integration
Chemicals & Advanced Materials/Materials Processing & Manufacturing Technologies

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