

附件四、技術說明表



開發異相鈀金屬觸媒高度分散於有機金屬框架 應用於以甲酸為碳源之烯類加氫甲醯化與加氫羧基化反應

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簡歷：

<https://che.ntu.edu.tw/che/kevinwu.html>

<https://fnmkevinwu.wordpress.com/>

市場及需求：

加氫甲醯化反應與加氫羧基化反應為工業上生產醛類與酸類之精細化學品之重要工業製程，需使用一氧化碳為碳源於高溫高壓下進行反應，雖然已有文獻提出以甲酸作為碳源可於溫和條件下達到高選擇性與高產率，然而其需使用勻相觸媒而限制其工業化應用，急需高效非勻相觸媒推動其工業化進程。

技術摘要(含成果)：

為加速以甲酸為碳源之加氫甲醯化反應與加氫羧基化反應工業化進程，以綠色化學生產精細化學品，本技術開發出兩種非勻相觸媒分別應用於加氫甲醯化反應與加氫羧基化反應，可透過簡單物理方法分離並回收觸媒並成功達到高產率。

優勢：

本技術所合成之兩種非勻相觸媒可透過簡單物理方法進行分離與回收，此外，第二種觸媒可表現出比原有勻相觸媒更佳之反應活性。

競爭產品：

以一氧化碳為碳源之加氫甲醯化反應與加氫羧基化反應工業化製程。

專利現況：

- (1) 本技術無相關專利。
- (2) 本研究團隊在非勻相觸媒以及精細化學品領域已具有數十年研究經驗。

聯絡方式(請不用填)：

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Heterogeneous palladium well-dispersed on metal-organic framework catalysts applied in the hydroformylation and hydroxycarbonylation of olefin with formic acid

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Experience:

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Market Needs:

Hydroformylation and hydroxycarbonylation are important industrial processes for the production of fine chemical products such as aldehydes and acids. These processes involve using carbon monoxide as a carbon source under high-temperature and high-pressure conditions. Although the literature has proposed using formic acid as a carbon source to achieve high selectivity and yield under mild conditions, its industrial application is limited by the requirement for homogeneous catalysts. There is an urgent need for efficient heterogeneous catalysts to drive the industrialization of these processes.

Our Technology:

To expedite the industrialization process of hydroformylation and hydroxycarbonylation using formic acid as a carbon source, and to promote the green chemistry production of refined chemical products, this technology has developed two types of heterogeneous catalysts for the respective reactions. These catalysts can be easily separated and recovered through simple physical methods, thereby achieving high yields successfully.

Strength:

The two heterogeneous catalysts synthesized by this technology can be separated and recovered through simple physical methods. Additionally, the second catalyst exhibits superior reaction activity compared to the homogeneous catalyst.

Competing Products:

The industrial process for hydroformylation and hydroxycarbonylation using carbon monoxide as a carbon source.

Intellectual Properties:

- (1) There is no related patent for this technology.
- (2) Our research team has decades of research experience in the field of heterogeneous catalysts and fine chemicals.

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