

附件四、技術說明表



自回收聚乳酸衍生之新型異相催化劑及其於合成環狀碳酸酯之應用

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國立台灣大學 化學系

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市場及需求：

將二氧化碳與環氧化物催化合成之環狀碳酸酯具有廣泛應用及良好的經濟價值，在工業界極大部分使用異相催化系統，因此開發出良好的催化劑課題極為重要，且相對以往的粉狀或球狀催化劑，可直接塑形之高分子催化劑在回收以及反應槽客製設計有相對優勢。

技術摘要(含成果)：

本發明提供一種類玻璃體聚合物(Vitrimer)固態催化劑，此催化劑與有良好的催化效果，並且可重複使用六次以上仍維持轉化率達約 50%。

優勢：

可在溫和條件下合成環狀碳酸酯且具有高轉換率、高回收次數之固態催化劑，且此固態催化劑為由新型類玻璃體聚合物所組成，在回收便易性與製程設計上優於傳統固相催化劑。

競爭產品：

工業界已有傳統方法製作環狀碳酸酯。

專利現況：

EP3098219A1 (Method for synthesizing cyclic carbonates, 2018)

RU2701555C2 (Method of synthesis of cyclic carbonates, 2019)

CN105363490A (一種用于 CO₂ 環加成反應的離子型高分子催化劑及其制备方法, 2016)

CN101318949A (一種固載離子液體催化劑催化合成環狀碳酸酯的方法, 2016)

US20170088535A1 (Catalysts and methods for making cyclic carbonates, 2017)

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A Novel Heterogeneous Catalyst Derived from Recycled PLA and Its Application in the Synthesis of Cyclic Carbonate

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Experience:

National Taiwan University, Professor 1994 ~
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Market Needs:

Synthesis of cyclic carbonates from carbon dioxide and epoxides have a wide range of applications and good economic value. The industrial field usually uses heterogeneous catalytic systems. Therefore, it is extremely important to develop a good catalyst. Compared to traditional heterogeneous catalysts, vitrimer-based catalysts have relative advantages in recycling and custom design of reaction tanks.

Our Technology:

This present invention provides two solid catalysts, one of which is an organic polymer, and the other one is to modify the organic polymer on a carrier. Both catalysts had efficient catalytic and recyclable that can reuse more than eight times with 80% conversions.

Strength:

Synthesized cyclic carbonates with high conversions and recyclable catalysts. To reuse catalyst only needed through simple suction filtration without complicated steps.

Competing Products:

The industry has traditional methods for making cyclic carbonate chemicals.

Intellectual Properties:

EP3098219A1 (Method for synthesizing cyclic carbonates, 2018)

RU2701555C2 (Method of synthesis of cyclic carbonates, 2019)

CN105363490A (Ionic polymer catalyst for CO₂ cycloaddition reaction and preparation method thereof, 2016)

CN101318949A (Process for synthesizing cyclic carbonate with catalysis of solid carried ion liquid catalyst, 2016)

US20170088535A1 (Catalysts and methods for making cyclic carbonates, 2017)

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