

附件四、技術說明表



高效異相觸媒應用於聚碳酸酯之低溫甲醇解反應

提案人：吳嘉文 教授

單位：國立臺灣大學 化學工程學系/研究所

簡歷：

台灣大學化學工程學系網站 <http://www.che.ntu.edu.tw/che/?p=391>

市場及需求：

現今大多的廢棄塑膠皆以掩埋或焚燒的方式處理，但隨著各國法規趨嚴與環保意識的興起，全球對回收再生塑料的需求呈現激增的趨勢。其中，聚碳酸酯之廢棄物尤為重視，其組成單體（雙酚 A）容易在處理程中被釋放並對環境及人類健康造成嚴重的損害，因此本案提供一種化學回收法的技術，可提供大量高品質原料以滿足再生聚碳酸酯、環氧樹脂與乙烷基酯等相關產品之市場需求，達到循環經濟的目標。

技術摘要(含成果)：

本技術開發兩種異相觸媒應用於聚碳酸酯之甲醇解，此二種觸媒具有價格低廉且高活性的優點，除此之外，此反應可以在常壓常溫的環境下操作，異相觸媒亦具有產物易分離及觸媒可回收再利用。

優勢：

高活性、價格便宜、常壓常溫的操作環境、產物易分離、觸媒可回收再利用、低腐蝕性。

競爭產品：

使用均相觸媒、異相觸媒催化的化學解聚製程。

專利現況：

- (1) 和本技術相關之專利 (CN 113480411 A, CN 114904542 A, CN 116535316 A], TW 202222755 A, CN 116003767 A)。
- (2) 本研究團隊在異相觸媒以及生物質轉化領域已具有數十年研究經驗。

聯絡方式(請不用填)：

臺大產學合作總中心

Tel: 02-3366-9945, E-mail: ordiac@ntu.edu.tw



Highly active heterogeneous catalysts for low-temperature methanolysis of polycarbonate.

PI : Prof. Chia-Wen Wu

Department of Chemical Engineering, National Taiwan U.

Experience:

Chemical Engineering Department of NTU <http://www.che.ntu.edu.tw/che/?p=391>

Market Needs:

Currently, the treatment of plastic waste mostly is either incineration or landfill. However, with the raising of environmental awareness and stricter law enforcement, the global demand for recycled plastic materials has increased significantly. Especially, the processing of polycarbonate (PC) catches more eye owing to its composed monomer, bisphenol A, which is easily released and is hazardous to the environment and our human health. Thus, this case proposes a chemical recycling process, that can not only provide high-quality raw materials for polycarbonate, epoxy resin, and vinyl ester resin industries but also reach the goal of the circular economy.

Our Technology:

We developed two highly active and inexpensive heterogeneous catalysts for PC methanolysis, which can be performed under normal temperatures and pressure. In addition, they also benefit from easier product separation and catalyst reuse.

Strength:

Highly active, inexpensive, mild condition, easier product separation, catalyst reuse

Competing Products:

Homogeneous or heterogeneous catalysts do depolymerization processes.

Intellectual Properties:

- (1) There are related patents for this technology. (CN 113480411 A, CN 114904542 A, CN 116535316 A, TW 202222755 A, CN 116003767 A) °
- (2) Our research team has decades of research experience in heterogeneous catalysts and biomass conversion.

Contact (do not need to fill out):

Center for Industry-Academia Collaboration, NTU
Tel: 02-3366-9945, E-mail: ordiac@ntu.edu.tw