

附件四、技術說明表

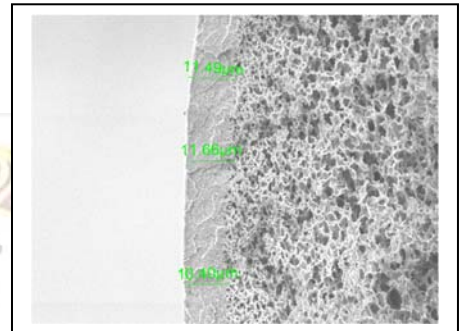


二氧化碳分離之高效中空纖維分離膜材與模組

提案人：康敦彥 教授

單位：國立臺灣大學 化學工程學系/研究所

簡歷：<https://www.mmlab-ntu.tw/zh>



市場及需求：

隨著全球對減碳需求日益迫切，碳捕捉技術已成為實現淨零排放的關鍵。傳統的胺吸收法雖被廣泛應用，但其存在能耗高、腐蝕性強及吸收劑降解等問題，限制了其效能與應用範圍

技術摘要(含成果)：

將金屬有機框架材料(MOF)分散於高分子(PEBAX)中，並塗布於高分子中空纖維膜後製作成模組，而此模組可應用於二氧化碳/氮氣分離

優勢：

低(操作)成本、連續式操作、環保(綠色製程)、高操作彈性及設備占地小

競爭產品：

Polaris™ membrane, Sepuran®, Generon®, Polysulfone hollow fiber

專利現況：

本團隊已發展用於二氧化碳捕捉與提純的氣體分離膜將近十年，至今已開發出低成本、高效能、且具有放大性的中空纖維薄膜。預計將能有效運用在煙道氣的二氧化碳捕捉以及甲烷蒸氣重組產氫程序中的二氧化碳移除。

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



High-Efficiency Hollow Fiber Membrane Material and Module for Carbon Dioxide Separation

PI : Prof. Dun-Yen Kang

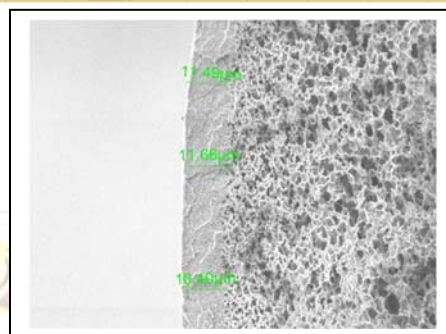
Department of Chemical engineering, National Taiwan University

Experience:

2021–present | Professor in Department of Chemical Engineering

2017–2021 | Associate Professor in Department of Chemical Engineering

2013–2017 | Assistant Professor in Department of Chemical Engineering



Market Needs:

As the global demand for carbon reduction becomes increasingly urgent, carbon capture technology has emerged as a key solution for achieving net-zero emissions. While the traditional amine absorption method is widely used, it faces challenges such as high energy consumption, strong corrosiveness, and degradation of absorbents, which limit its efficiency and scope of application.

Our Technology:

By dispersing metal-organic framework materials (MOF) into a polymer (PEBAX) and coating it onto polymer hollow fiber membranes to form a module, this module can be applied for carbon dioxide/nitrogen separation

Strength:

Low operational cost, Continuous operation, Environmentally friendly (green process), High operational flexibility, Smaller equipment footprint

Competing Products:

PolarisTM membrane, Sepuran[®], Generon[®], Polysulfone hollow fiber

Intellectual Properties:

A method for fabrication of hollow fiber membrane module for CO₂ separation

A method for preparation of solution with polymer and MOFs for the deposition of dense mixed matrix membranes

A method for the deposition of dense mixed matrix membranes on tubular support

Contact (do not need to fill out):

Center for Industry-Academia Collaboration, NTU

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