



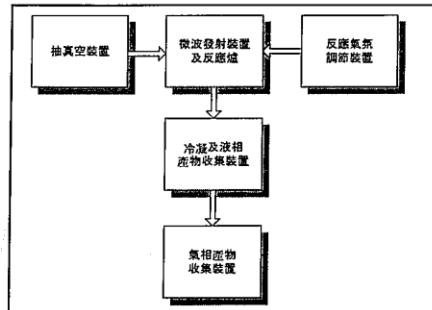
發明名稱：微波誘發裂解生質廢棄物全回收為可利用之資源與能源之方法

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簡歷：(可列出相關連結，例如系所、研究室網頁)

<http://enve.ntu.edu.tw/dispPageBox/giee/GieeCP.aspx?ddsPageID=GIEETCFULL&dbid=3234561903#2>



市場及需求：地球上的化石燃料終將消耗殆盡，其

燃燒後所排放的二氧化碳為造成地球溫室效應的主因，故目前許多先進國家皆已積極進行替代能源之研發及商業應用。生質能源為替代能源之一種，係以化學、物理或生物技術將植物或動物等有機體轉化為可利用之能源型式，包括有生質柴油、生質酒精及氫能源等。製造生質能源之技術種類眾多且成熟度不一，其中微波裂解與低溫炭化技術目前尚處於研發階段；藉由參考國內外相關研究文獻，以及本研究團隊之過去成果，評估微波裂解技術與低溫炭化應具有高度之開發潛力。

技術摘要(含成果)：本發明係一種利用微波照射將生質廢棄物全回收，轉化為可用之資源與能源之方法。先將各種生質廢棄物破碎後，置入反應爐體內，並調整反應爐體內部氣體（可通入氮氣、氦氣、氬氣或二氧化碳等），使之為缺氧狀態，最後再啟動微波進行反應，使生質廢棄物可快速裂解為可用之能源氣體如氫氣、甲烷、一氧化碳等，液相產物可做為柴油及重油等，殘留之固體則可做為廢水處理之吸附劑。

優勢：微波裂解技術可產出固、液、氣三相產物，各相產物皆有經濟價值，固相產物可作為焦炭燃料或活性碳之來源，液相產物可進一步提煉為生質柴油或其他液態燃料，氣相產物則可再純化為氫能源、水煤氣等燃料氣。再者，由於微波加熱技術之高度選擇性與集中性，妥善應用可提升反應效果，進而減少工作時間、降低能源消耗。

競爭產品：熱裂解產製之生質柴油，或微生物發酵產製之生質酒精。

專利現況：

(1)本技術已獲專利（中華民國發明專利第 I347331 號）。

(2)本研究團隊具有數十年研究經驗。

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Title of Invention: microwave-induced pyrolysis of biomass

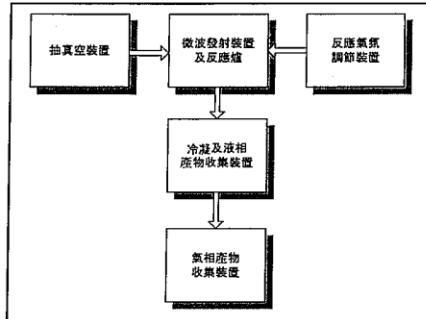
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Experience:

<http://enve.ntu.edu.tw/dispPageBox/giee/GieeENCP.aspx?ddsPageID=GIEETEFULL&dbid=3234563903>

Market Needs: Renewable energy has attracted considerable interest nowadays. The interest in renewable energy primarily comes from the perceived risks of using fossil fuels and CO₂ emissions. Researches and developments of renewable energy that can substitute fossil fuels have been revived in recent years due to high worldwide demand for energy, unstable and uncertain petroleum sources, and concerns over global climate change. Biomass is a promising alternative energy source, because it is an inexpensive, renewable, and abundant source of carbon.



Our Technology: This patent presents the development of microwave-induced pyrolysis to total recovery of resources and energy from, but not limited to, rice straw, or other biomass and organic wastes.

Strength: The high H₂ content (over 50 vol. % of total gaseous products) imply that microwave-induced pyrolysis of biomass waste has the potential to produce the H₂-rich fuel gas. Alkanes, polars, and low-ringed polycyclic aromatic hydrocarbons were three primary kinds of compounds in the liquid product. The solid residues with stable properties and large surface area could serve as adsorbents in water and wastewater treatment.

Competing Products: bioenergy produced using thermal pyrolysis, bioenergy produced from biological fermentation.

Intellectual Properties: ROC patent: I347331

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