

# 奈米幾丁聚醣之製備及應用研究

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## 摘要

本研究分為兩部分主題進行論述，第一部份係以噴霧乾燥法製備幾丁聚醣奈米粉末，第二部份則是以幾丁聚醣懸浮液製備金奈米粉末。第一部份以1% (w/v) 幾丁聚醣懸浮液進行噴霧乾燥製備後可獲得幾丁聚醣奈米粉末。在壓力4 kg/cm<sup>2</sup>與樣品流量30 mL/min條件下，由噴霧角度與霧氣外觀比較，超音波霧化器產生之液滴更加微細，且經噴霧乾燥製得產物顆粒粒徑亦較二流體式霧化器者微小。由於旋風收集器處僅能收集微米級顆粒，此處先以靜電棉證實次微米級顆粒存在後，再以實驗型靜電集塵器加以收集。以超音波霧化器進行噴霧乾燥，當高壓空氣條件上升時產率隨之增加(2.6%、5.7%、15.5%)、含水率隨之降低(9.1%、8.3%、6.8%)、顆粒表面漸趨平滑，能提供商業化生產奈米粉末另一選擇。第二部份金/幾丁聚醣奈米顆粒可藉由鹼性幾丁聚醣懸浮液來製備，幾丁聚醣同時扮演分散劑與還原劑角色。金奈米顆粒與奈米粉末可藉由簡單之熱裂解與酸水解方法製得，經熱裂解可獲得黑色的奈米金粉末。FESEM證明金奈米粉末粒徑範圍約介於50~200 nm。酸水解是另一個快速降解幾丁聚醣的方法，本研究採用醋酸來進行酸水解。由AEM證明，紫紅色金懸浮液中金奈米顆粒粒徑均小於40 nm，其分散性佳。幾丁聚醣懸浮液可製備極佳之奈米金粉末與奈米金顆粒，其製程不需使用毒性物質。

關鍵詞：奈米粉末、奈米顆粒、超音波霧化器、靜電集塵器、熱裂解、酸水解、幾丁聚醣、奈米粉末、奈米顆粒、超音波霧化器、靜電集塵器

## 目錄

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