

以聚多巴胺顆粒熒光碳納米顆粒的製備
**Preparation of polydopamine particles for
 Fluorescent carbon nanoparticles**

李芳儀 Fang-Yi Li, 鍾宜璋 Yi-chang chung
 國立高雄大學化學工程與材料工程學系

The study used Polydopamine nanoparticles synthesized by microwave heating the carbon nanoparticles having fluorescent properties, in an alkaline environment polymerized polydopamine nanoparticles. Using a microwave is a uniform, fast and safe heating, microwave digestion in a short period of polydopamine particles into nano-carbon particles, based on the most recent years of research, polydopamine nanoparticles have good biological phase capacitive, carbon particles can be used as bio-nano-probe applications.

探討間質幹細胞在納米金複合材料上的分化能力
**Differentiation Capacity of Mesenchymal Stem
 Cells in Nanogold Composites**

吳峻霆 Jyun-ting Wu¹, 洪慧珊 Huey-Shan Hung^{1,2}

¹中國醫藥大學基礎醫學研究所 Graduate Institute of Basic Medical Science, China Medical University, Taichung, Taiwan, ROC; ²中國醫藥大學神經精神醫學中心 Center for Neuropsychiatry, China Medical University Hospital, Taichung, Taiwan, ROC.

A series amount of nanogold particles (AuNPs) modified in two different natural extracellular matrix: fibronectin and collagen to form fibronectin-nanogold composites (FN-AuNP) and collagen-nanogold composites (Col-AuNP) were used as a model system in this study. The main goal of this study was intended to explore the molecular mechanism of cell mesenchymal stem cells (MSCs) migration, proliferation and differentiation capacity while cultured on FN-AuNP and Col-AuNP materials.

**Partial surface modification on bio-inspired dry
 adhesives for usage in humid environments**

徐漪婷 Yi-Nin Hsu¹, 林友志 Yu-Chi Lin¹, 邱逸閣 Yi-Hong Chiu², 鍾宜璋 Yi-Chang Chung¹

¹國立高雄大學 化學工程及材料工程學系; ²仿生醫股份有限公司

We applied thermal imprinting to fabricate gecko-feet-like nanostructures on HDPE films and partially modified those surfaces via dopamine and catechol to enhance their adhesion to wetted substrates. About 400 nm diameter nanopillar-patterns were prepared using nanoimprint and solvent replacement techniques to fabricate a practical, large-area dry adhesive tape. The completeness of a surface was enhanced to 95% and the tape with 400 nm diameter nanopillars showed 3170 nN adhesion force and was able to suspend 1.05 kg per cm². In order to apply the adhesive in a humid environment, we introduced the controlled catecholic functional group on the nanopillars using a layer-by-layer method and micro-contact printing to modify the surfaces. The nanopillared surfaces displayed both polar and nonpolar interaction with a substrate under water.

間葉幹細胞分化能力探討藉由金奈米子幾丁聚醣
 複合薄膜

**The Differentiation Ability of Mesenchymal Stem
 Cells on Nanogold-Chitosan Composite Films**

張智鉉 Chih-Hsaun Chang¹, 方煒翔 Wei-Xiang Fang², 洪慧珊 Huey-Shan Hung^{1,3}

¹中國醫藥大學基礎醫學研究所 Graduate Institute of Basic Medical Science, China Medical University, Taichung, Taiwan, ROC; ²明道大學生物科技學系 Department of Biotechnology, Mingdao University, Changhua, Taiwan, ROC; ³中國醫藥大學神經精神醫學中心 Center for Neuropsychiatry, China Medical University Hospital, Taichung, Taiwan, ROC.

Stem cells have ability to differentiate through