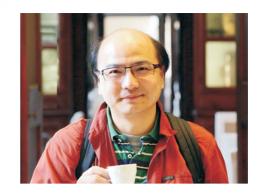
# 劉 英 麟 教授

### **YING-LING LIU, PROFESSOR**

- 國立清華大學 學士,民國八十年
- 國立清華大學 博士,民國八十五年
- B.S. National Tsing Hua University, 1991
- Ph.D. National Tsing Hua University, 1996



## 主要研究領域

本實驗室目前研究主題包括:

#### • 高性能高分子材料

以分子設計、有機合成和高分子化學等技術,開發及合成新穎的高性能及功能性高分子。目前的重點包括超低介電高分子、難燃與高耐熱高分子、 具自我修復能力的高分子材料等。

## ■ 有機/無機奈米混成與複合材料

奈米材料的表面修飾和官能化,是開發奈米混成和複合材料的關鍵步驟,目前研究的奈米材料對象有奈米二氧化矽粒子、碳奈米管、C60、氧化石墨烯等,進行高效能的奈米材料表面修飾,設計開發功能性的奈米混成和複合材料:也進行所開發材料的應用研究,對象包括使用於燃料電池的的研究,對象包括使用於燃料電池的的分換膜和電極、生物分離薄膜、白色螢光奈米粒子、抗靜電與抗電磁波材料等。

#### • 高分子分離膜

薄膜科技在節能、資源再生和高效率分離等方面扮演重要角色,目前的研究,包括薄膜表面改質與官能化,並應用於渗透蒸發、生物分離、氣體分離、油水分離等。

#### **Main Research Interests**

Current research in my group is focused in the following areas:

#### Synthesis of High Performance Polymeric Materials

Basing on molecular design, organic synthesis, and polymer chemistry, we have devoted to preparation of high performance and functional polymers. Current topics include ultra-low-dielectric materials having dielectric constants below 2.0, flame-retardant and thermal-resistant polymers, and self-repairing polymers.

#### Organic-Inorganic Nanohybrids and Nanocomposites

Surface modification and functionalization is the critical step for preparation of organic-inorganic nanohybrids and nanocomposites. We try to develop new reaction routes for surface modification of inorganic nanomaterials such as silica nanoparticles, carbon nanotubes,  $C_{60}$ , and graphene oxide. Self-assembly behaviors of the nanomaterials are interested in. The prepared materials have been studied for applications in proton exchange membrane fuel cells, bio-separation membranes, white-light photoluminescent materials, and materials for ESD and EMI.

#### Polymeric Membranes

Membrane technologies play important roles in energysaving, resource recovery, and high performance separation processes. The research interests are most on the preparation and modification of membranes and their applications including pervaporation, bioseparation, gas separation, and water/oil separation.

## 代表作 (Selected Publications)

- C.H. Huang, <u>Y.L. Liu\*</u>, "Self-crosslinkable polymers from furan-functionalized Meldrum's acid and maleimides as effective precursors of free-standing and flexible crosslinked polymer films showing low dielectric constants", *Polym. Chem.* **11**(9), 1606-1613 (2020).
- Y.L. Chang, T.C. Wei, Y.L. Liu\*, "Electrochemical activation of polymer chains mediated with radical transfer reactions", Chem. Commun. 56(17), 2626-2629 (2020).
- C.Y. Tsai, K.J. Peng, C.F. Wang, Y.L. Liu\*, "Creation of lithium ion conducting channels in gel polymer electrolytes through nonsolvent-induced phase separation for high-rate lithium ion batteries", ACS Sustainable Chem. Eng. 8(5), 2138-2146 (2020).
- B.K. Su, C.H. Chang, Y.M. Sun, C.C. Hu, J.Y. Lai, <u>Y.L. Liu</u>\*, "Porous membranes of thermosetting polybenzoxazine resins with interconnected-pores for organic solvent microfiltration", *J. Membr. Sci.* **586**, 267-273 (2019).
- Y.T. Chen, Y.L. Liao, Y.M. Sun, C.C. Hu, J.Y. Lai, <u>Y.L. Liu\*</u>, Lignin as an effective agent for increasing the separation performance of crosslinked polybenzoxazine based membranes in pervaporation dehydration application", *J. Membr. Sci.* 578, 156-162 (2019)

