Research Interests:
1. Green Technology
2. Synthetic Chemistry
3. Organometallic Chemistry
4. Fuel Cell (PEM membrane); Fluoropolymer
5. Material Science
Vacuum line
Current Research Projects

1. Lithium Battery Polymeric Electrolyte Films
2. Liquid Crystalal Materials
3. Catalysis (Organometallics)
4. Fuel Cells
5. X-Ray Crystal Growing (Catalysts)
Current Research Projects

6. Green Chemistry
   - Fluorous Biphasic System (FBS)
   - Aerobic Alcohol Oxidation under FBS
   - ATRP (Recoverable)
1. Lithium Battery Electrolyte

- See the next chart for the procedure
\[
\begin{align*}
\text{I} - \text{CF}_2 - & - \text{I} \\
\downarrow & \\
\text{+Na}_2\text{S}_2\text{O}_4 / \text{NaHCO}_3 \\
\text{NaO}_3\text{S} - & (\text{CF}_2 - )_6 \text{SO}_3\text{Na} \\
\downarrow & \\
+\text{Cl}_2 \\
\text{ClO}_2\text{S} - & (\text{CF}_2 - )_6 \text{SO}_2\text{Cl} \\
\downarrow & +\text{metal fluoride} \\
\text{FO}_2\text{S} - & (\text{CF}_2 - )_6 \text{SO}_2\text{F} \\
\downarrow & +\text{NH}_3 \\
\text{H}_2\text{NO}_2\text{S} - & (\text{CF}_2 - )_6 \text{SO}_2\text{NH}_2 \\
\downarrow & +\text{Li} \\
\text{LiHNO}_2\text{S} - & (\text{CF}_2 - )_6 \text{SO}_2\text{NHLi} \\
\end{align*}
\]
2. Liquid Crystal Materials

1. 

2. 

\[
\text{C}_5\text{H}_{11} \quad \begin{array}{c}
\text{C}_5\text{H}_{11} \\
\text{-----} \\
\text{F} \\
\text{F} \\
\end{array} \\
\text{F} \\
\text{F} \\
\text{F} \\
\text{F} \\
\text{F} \\
\end{array}
\]
Fuel Cell (Proton Exchange membrane)
Green Chemistry

1. FBS: Fluorous biphasic system
2. Aerobic Alcohol Oxidation under FBS

biphasic  monophasic  biphasic
3. ATRP (Cu recoverable)

![Chemical reaction diagram]

- **MMA** mw 100
- **bp: 100 °C**

**Reaction progress:**
- 聚合反應進行
- 反應完成

![Experimental setup images]
X-Ray

[4,4'-bis(C₃F₇CH₂OCH₂)-2,2'-bpy]

[4,4'-bis(HC₄F₈CH₂OCH₂)-2,2'-bpy]
Departmental Seminar on May 18
Host
Speaker: Prof. Thrasher
Publication

A. 期刊論文 (以北科大發表之英文期刊：5篇)


Norman Lu(呂良賜),* Yan-Chou Lin(林原週), Jeng-Yung Chen(陳政湧), Chi-Wen Fan(范己文), Yuh-Sheng Wen(聞昱生), and Ling-Kang Liu(劉陵崗)* “(2,2’-bipyridine)palladiumdichloride Derivatives as Recyclable Catalysts in Heck Reactions” JCCS 2006, 53(6), 1517-1522 (SCI, 0.617), (NSC 94-2113-M-027-003)

Invitation

- You are cordially invited to join this group for the cutting-edge research.