Lecture Outline 課程大綱

(Minor reasonable changes may apply without prior notice. 有可能出現不事先通知的小幅度且合理的變更。)

Last updated: Jun. 11, 2023

Flexible Electronics and Systems 軟性電子元件與系統 (NEMS5820)

Cheng-Yao Lo 羅丞曜

Lectures are given in English. 英文授課。

Schedule 時間

W2W3W4 每週三 2, 3, 4 堂

Place 地點

Delta321 台達館 321 教室

TA 助教

Mr. Padmanabh Pancham (#80128, pancham.eic06g@gapp.nthu.edu.tw)

Prerequisite 修課條件

Students are expected to have a bachelor's degree in physics-, chemistry-, mechanics- or electrical-related engineering fields.

建議修課學生應具有大學部工程背景。

Description 課程目標

Flexible electronics device and system made by printing technologies gained various attentions from the professional fields of physics, chemistry, material, and electrical engineering, which generated a novel research field of flexible printronics.

This lecture is the first half (first semester) and the fundamental of "Flexible Electronics". This lecture contains the design, simulation, process, and testing based on a flexible display device.

Students will gain combinational knowledge of solid-state and polymer electronics device and system as well as their respective processes. Practical simulations will be introduced to let students obtain real feelings of the optical designs. Also, topical student presentation will be conducted.

由印刷方式製作之軟性電子元件與系統在近年引起了包含物理、化學、材料、電機等背景研究員的興趣，並且衍生了一個新的稱為軟性印刷電子的研究領域。

本課程是軟性電子的第一部分(基礎學習)。本課程(本學期)將以一個軟性顯示器為例，實際探討軟性電子元件與系統的設計、模擬、製作、測試等細節。

學生可藉此課程取得部分固態物理、聚合物電子、半導體製程等知識。視課程進度及修課人數，學生有機會藉由實際模擬了解設計軟性顯示器的光學考量。

Lecture Outline 課程大綱

(Minor reasonable changes may apply without prior notice. 有可能出現不事先通知的小幅度且合理的變更。)

Last updated: Jun. 11, 2023

Keyword 關鍵字

Flexible electronics, inkjet printing, printing electronics, reliability

可靠度、印刷電子、軟性電子、噴墨印刷

Outline 課程大綱、進度

(change without prior notice may apply)

1. Introduction and market (導言及市場介紹)
2. Case study (實例分析)
3. Simulation for a color filter (彩色濾光片之光學模擬)
4. Ultra thin glass (超薄玻璃)
5. Engineered substrates (聚合物基板工程)
6. Barrier protection (絕緣阻水氧層)
7. Transparent conducting oxide (透明導電氧化物)
8. Topical presentation (個人專題報告)

Evaluation 評分標準

Attendance (出席狀況): X(=10 to 20)%.

Project (作業): 30%

Oral presentation (口頭專題報告): 20+(20-X)%.

Final exam or paper report (期末考或書面報告): 30%

Reference 參考文獻

1. Flexible Flat Panel Displays, ISBN: 978-0470870488
2. Flexible Electronics, ISBN: 978-0387743622
3. Various academic publications.

Note 其他

In order to encourage the attendance, DO NOT record/copy any part of the lecture by electronic devices.

為鼓勵出席，課程內容禁止以任何電子手法記錄(錄影、錄音等)。