車輛工程系
Department of Vehicle Engineering

複合式儲能技術與微尺度能源載子傳輸計算
Hybrid Energy Storage Technology and Nano-Scale Energy Transport Computation

儲能系統與機電整合實驗室
Energy Storage & Mechatronic Lab.

O: 綜科 526-16,#3604
L : 綜科 B10-42,#3660
B10-21,#3694

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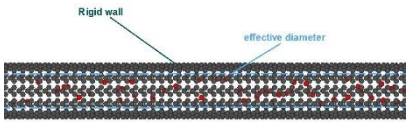
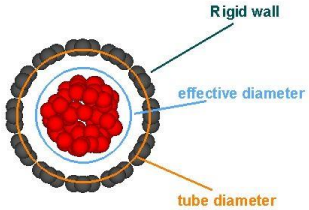
■ 研究領域

(1) 複合式儲能系統技術與能源管理系統開發；
(2) 儲能材料載子傳輸與機械性質微觀分析；
(3) 前瞻能源材料應用研究—熱電材料於低階熱源應用研究、分子篩多孔材質擴散性質研究



■ 近期研究主題

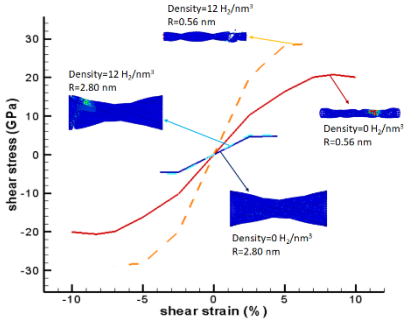
- 燃料電池儲氫系統散熱設計與分析
- 高C-rate鋁離子電池充、放電儲能系統開發
- 客製化儲能模組電池管理系統設計開發
- 複合式儲能系統開發
- 奈米碳材儲氫材料吸附熱力學計算
- 複合材料微尺度熱傳與機械性質微觀分析
- 鋰電池電極離子傳輸行為與應力破壞之分子動力學分析



氫分子於碳管內之擴散模型
Hydrogen Diffusion in Rigid-Lattice Model

■ Research Area

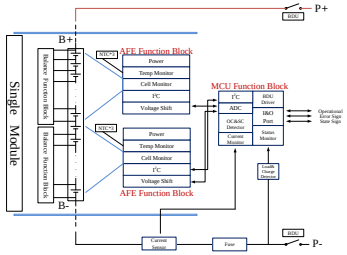
(1) Hybrid Energy Storage System Technology and Energy Management System.
(2) Micro/Nano scale Analysis of Thermomechanical Response of Fundamental Carriers in Energy Storage Materials .
(3) Development of Novel Materials in Energy Conversion Application (Thermoelectric and molecular Sieve): An Computational Study.



碳管扭轉作用下儲氫及力學機制
Morphological changes of filled nanotube under torsion

■ Recent Topics

- Study on Heat and Mass Transfer of Hydrogen Storage System
- Development of High C-rate Al-ion Battery Energy Storage System
- Development of Customized Battery Management System (BMS) for Energy Storage
- Development of Hybrid Energy Storage System for Grid
- Computational Study on Adsorption Isotherm of Carbon-Based Hydrogen Storage Materials
- Micro/Nano scale Analysis of Thermomechanical Response of Fundamental Carriers in Nano-Compisite Materials
- Molecular Study on Mechanical Response of Lithium-Ion Battery Electrodes During Charge/Discharge Process



客製化電池模組管理系統架構圖
Block Diagram of Customized battery module management system