

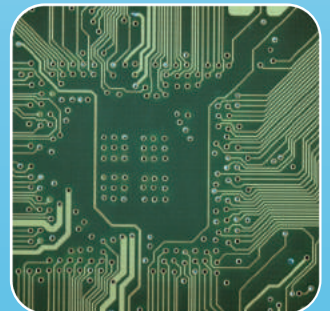
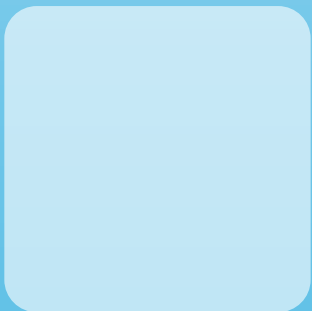
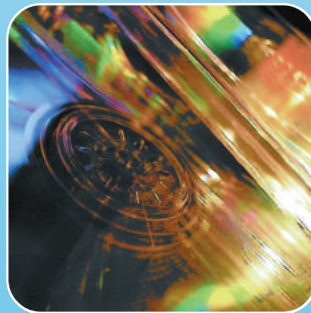
2017

中技社科技獎學金

2017 CTCI Foundation Science and Technology Scholarship



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定位與展望

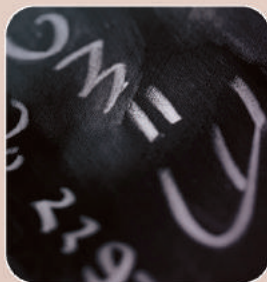
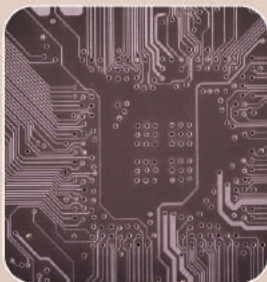
- >> 發揮公益法人精神，獎掖科技人才，倡導科技新知。
- >> 推動環境與能源智庫，建構政府與產業交流平台。
- >> 投注科技研發，促成產業升級，提昇國家競爭力。



中技社科技獎學金



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前言



財團法人中技社(CTICI Foundation)於1959年10月12日創設，(原名財團法人中國技術服務社China Technical Consultants, Inc.)，以引進科技新知，培育科技人才，協助國內外經濟建設及增進我國生產事業之生產能力為宗旨。成立以來，協助推動國家建設，先後組成觸媒研究中心，污防、能源、環境等技術發展中心，協助政府擬定環保、能源等施政策略，提供產業技術諮詢與輔導；另設置講座、獎學金，贊助各項學術活動，獎掖傑出優秀人才，帶動國內科技研發風潮。近年因應國際趨勢與發展，投入智庫平台業務運作，致力新創研究與應用，促成科技推升與經濟繁榮之兼籌並顧；朝「科技創新·公益永續」的願景邁進，實現財團法人奉獻國家社會之崇高理想。

歷史沿革

本社發展概分三個時期：

* 創導工程服務期(1959~1979年)

- 參與國內外石化煉油廠之設計監造，催生國內石化工業。
- 設立「工程教育研究基金」，培育人才、推動學術研究。
- 轉投資成立「中鼎工程(股)公司」，邁向國際化經營。

* 研究發展與技術服務期 (1980~2004年)

- 從事污防、節能、環保技術諮詢與輔導，提供策略建言與技術改進。
- 持續頒發獎學金並贊助相關學術活動。

* 知識創新服務期(2005年~迄今)

- 轉型智庫研討，投注前瞻之科技研發。
- 獎掖優秀科技人才，深化社會公益服務。

業務成果

* 引進工程新知，促進產業升級

- 轉投資成立中鼎工程之前，本社已承辦近70項大小石化廠設計或建造。中鼎公司承襲本社20年技術與信譽，發展至今，連獲天下雜誌評選為「最佳聲望標竿

企業」營建類第1名，ENR工程公司世界排名150強之列。

- 提供國內工商業各項技術輔導與服務，包括：舉辦污防講訓、實地訪測；節能輔導、節能減碳研討；承接政府及民間空污、廢毒等專案，完成政府環保法規及制度研擬；申獲觸媒國內外相關專利及研究報告。
- 智庫建置迄今，選定能源、環境、經濟及長照等相關議題，舉辦座談與論壇；提出政策建言及專題報告，作為政府施政與產業策略之參考；以提升國家競爭力，促進經濟穩定成長。

* 培育科技人才，贊助學術活動

- 上千同仁接受觸媒、污防、能源、環保相關培訓；因能力倍受業界肯定，在本社引薦及輔導下，轉往其他企業或自行創業。
- 獎勵研創傑出之國內青年學子3,700餘位，發放獎學金及學者講座新台幣壹億餘元。近年增置境外生研究獎學金及境外生生活助學金，並舉辦台陸青年學子交流互訪，以及在台境外研究生參訪國內企業等活動；綜合雙效，導引台灣青年加入全球競逐，以及國際人才進入台灣企業的意願。
- 贊助具指標意涵之協會學會，舉辦相關公益活動，並經由本社網站聯結播載，擴增群策群力的效應。

展望未來

* 專注前瞻探索，聚焦智庫研討

- 加強產學合作研發，落實研發成果技轉，開拓新創產業契機。
- 凝聚公眾利益公正論辨，提供國家可行性政策建言，期與產業相輔而成。

* 獎掖優異人才，擴大公益效能

- 獎掖重點大學青年學子，舉辦國際交流觀摩，涵育具創意巧思及高階科技人力資源。
- 襄贊科技與文創相關活動，實踐公益法人回饋社會之理念。



獎學金簡述



本社於1962年設置「工程教育研究基金」，以其孳息辦理各項獎學金、學術講座及科技研討會等社會公益活動。「中技社科技獎學金」獎項名稱曾先後以李遠哲、朱經武、李國鼎、金開英、孫運璿、李登輝先生等知名科研財經人士命名，獎勵大學院校優異學生。

為順應新科技及高等教育向上延伸，2007年起，針對國立知名大學之相關理工科系優秀研究生，頒發「研究獎學金」。2010年起，獎勵之研究主題聚焦於綠色科技、綠色創新、能資源、及環境保護等相關領域；另為鼓勵投入有市場價值之綠色創新與研發，設置「創意獎學金」個人組，以獎勵具有綠色科技創意潛力之大學生與碩士生。2011年起，「創意獎學金」另增設團體組，以激發學生群體腦力激盪之創作動能。2014年起，除延續「研究獎學金」、「創意獎學金」獎項之外，為獎勵在台正式修讀碩、博士學位之優秀境外研究生(含大陸、港、澳地區)順利完成學業及增進學成後留台工作意願，特增設「境外生研究獎學金」。本年度除延續研究獎學金、創意獎學金、及境外生研究獎學金三個獎項外，針對2016年度申請境外生研究獎學金時，可附加申請的「境外生生活助學金」，自2017年起特別獨立出來，可單獨個別申請，讓需要經濟協助之境外研究生，在臺求學期間生活無虞並能專心學習。

「中技社科技獎學金」自1963年頒發迄今逾50寒暑，頒發金額逾壹億元，受獎學生已超過3,700人，分別於產、官、學、研界頭角崢嶸，展現舉足輕重的影響力。本社乃於1998年起與歷年獎學金得主加強聯繫與互動，並於2002年擴大舉辦第40屆獎學金頒發典禮，2003年於台北圓山大飯店舉辦「歷屆獎學金得主新春聯誼」，2012年欣逢獎學金頒發屆滿半世紀，隆重舉辦第50屆獎學金頒獎典禮。

近年來，經由頒發典禮、聯誼活動，以及「中技社通訊」專訪等，凝聚薪火相傳的共識。爾後，本社將秉持「引進科技新知，培育科技人才」之創設宗旨，持續獎掖後起之秀，期使人才生生不息，彼此攜手發揮群創的恆久價值。

財團法人中技社



潘文炎 中技社 董事長

- ◆ 財團法人中技社 董事長
- ◆ 昱晶能源股份有限公司 董事長

主要經歷

- ◆ 國光電力公司 董事長
- ◆ 中油公司 董事長



余騰耀 中技社 執行長

- ◆ 財團法人中技社 執行長
- ◆ 台灣能源技術服務產業發展協會 榮譽理事長

主要經歷

- ◆ 財團法人台灣綠色生產力基金會 執行長
- ◆ 中鼎工程(股)公司 專案經理



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- ◆ 國家同步輻射研究中心董事長

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- ◆ 國立清華大學特聘講座教授
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- ◆ 台灣聯合大學系統副校長
- ◆ 中國材料科學學會理事長
- ◆ 中華民國顯微鏡學會理事長



牟 中原

評審委員

- ◆ 中央研究院院士
- ◆ 國家同步輻射研究中心董事

主要經歷

- ◆ 國立台灣大學講座教授
- ◆ 行政院國家科學委員會副主任委員
- ◆ 台灣催化學會理事長
- ◆ 亞太催化學會理事長



官 政能

評審委員

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- ◆ 德國科隆應用科技大學國際設計學院客座教授
- ◆ 美國在台協會「the American Innovation Center」member of Advisory Board

主要經歷

- ◆ 實踐大學副校長，設計學院創院院長，工業產品設計學系創系主任、創所所長
- ◆ 國立交通大學工業工程與管理研究所設計組創設主持人
- ◆ 大同公司&美國CONAIR Co.新產品研發部創設主持人
- ◆ 中華民國工業設計協會理事長
- ◆ 德國、韓國、中國、及香港等多項國際知名設計獎評審委員

評審委員會



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- ◆ 國立臺灣師範大學工業教育學系特聘教授
- ◆ 中華創意發展協會監事

主要經歷

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- ◆ 世界機關王國內與國際賽總裁判長
- ◆ 美國密西根大學(Univ. of Michigan, Ann Arbor)訪問學者
- ◆ 工業技術研究院機械所部門經理與研究員
- ◆ 多項政府與民間專題創意競賽評審



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- ◆ 臺灣數位學習與內容學會理事長
- ◆ 財團法人資訊工業策進會常務董事

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- ◆ 國立臺灣師範大學圖書館館長
- ◆ 國立臺灣師範大學電子計算機中心主任
- ◆ 科技部傑出研究獎
- ◆ 全球華人資訊教育學會年度貢獻獎



陳 綠蔚 評審委員

- ◆ 國光電力股份有限公司董事長

主要經歷

- ◆ 中油公司總經理
- ◆ 中美和石油化學股份有限公司董事長
- ◆ 中油公司副總經理／總經理室主任兼發言人
- ◆ 中油公司企研處副處長／處長
- ◆ 中油公司工業關係處組長／副處長
- ◆ 中油公司企研處管理師／組長



評審委員會



楊 鏡堂 評審委員

- ◆ 國立台灣大學機械工程學系終身特聘教授
- ◆ 國立台灣大學生物技術中心合聘研究員
- ◆ 國立台灣大學工程科學與海洋工程學系合聘教授
- ◆ 行政院能源及減碳辦公室執行長
- ◆ 台灣中油股份有限公司獨立董事

主要經歷

- ◆ 第二期能源國家型科技計畫執行長
- ◆ 台灣中油股份有限公司常務董事
- ◆ 台灣仿生科技暨五生產業發展協會常務理事
- ◆ 行政院國家永續發展委員會第16屆委員
- ◆ 國家科學委員會熱流學門及航太學門召集人



薛 文珍 評審委員

- ◆ 國立臺灣藝術大學副校長（首位來自科技界之副校長）
- ◆ 中國工程師學會理事（百年來首位女性理事）
- ◆ 亞太文化創意產業協會理事

主要經歷

- ◆ 工業技術研究院創意中心共同創辦人暨中心主任、院長室資深特助
- ◆ 國家產業創新獎、工研院前瞻研究傑出獎
- ◆ 奧地利林茲Ars Electronica首位台灣講者、台北花博夢想館協同主持人
- ◆ 工業技術研究院光電所跨組計畫主持人、正工程師、組長
- ◆ 美國紐約州通用電氣 (GE) 研發中心機械研發工程師



蘇 慧貞 評審委員

- ◆ 國立成功大學校長
- ◆ 國立成功大學環境醫學研究所特聘教授
- ◆ 中華民國國立大學校院協會理事長
- ◆ 財團法人高等教育國際合作基金會董事長

主要經歷

- ◆ 財團法人國家實驗研究院第5屆董事
- ◆ 財團法人高等教育評鑑中心基金會第4屆董事
- ◆ 國際科學理事會 (International Council for Science, ICSU) 科學委員會委員
- ◆ 國際室內空氣科學學會 (IAIAS) 會員 (Fellow)
- ◆ 2017哈佛大學公共衛生學院公共衛生實踐領導典範獎 (Harvard T.H. Chan School of Public Health's 2017 Leadership Award in Public Health Practice)

評審委員會



鄒 倫 評審委員

- ◆ 中技社環境技術中心主任

主要經歷

- ◆ 國立台灣大學環境工程研究所兼任副教授
- ◆ 國立中央大學環境工程研究所兼任副教授



王 鈺鎔 評審委員

- ◆ 中技社能源技術中心主任

主要經歷

- ◆ 元智大學化材系兼任
- ◆ 國立中央大學環工系
- ◆ 第二期能源國家型計畫分項共同召集人
- ◆ 財團法人中技社研企室主任
- ◆ 財團法人觸媒中心研究員



楊 顯整 評審委員

- ◆ 中技社企劃暨工程科技室主任

主要經歷

- ◆ 財團法人台灣綠色生產力基金會



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江 崇豪

國立成功大學 電機工程學系 博六

研究主題：固態照明用螢光粉之合成及其應用於白光
二極體元件

傑出表現

1. 國外期刊發表13篇
2. 國外研討會論文發表7篇、國內研討會論文發表4篇
3. 博士班研究生獎助學金、中華民國斐陶斐榮譽學會榮譽會員、大學修業期間優秀傑出獎、學行優秀獎學金、學海獎學金、科技部大專生研究計畫獎學金
4. 參與專案計畫3項
5. 申請中專利1件

自我介紹

學生就讀於國立成功大學電機所博士班，研究題目著重於無機發光材料之開發與應用，以及白光LED元件的製作，包含從材料端進行到元件端，與光譜學、色彩學之原理，曾負責執行國家能源型計畫總計畫與子計畫之執行，統整五個子計畫成果，讓我學習如何做好團隊合作以及溝通；在大學專題及碩博士班所受的訓練，使我可以自主學習、有效率地完成各項工作和目標。期許自己可以永續地學習多元知識，日後成為研發工程師或是從事科學研究的學者。

研究概述

本研究成功合成高效率之藍綠色螢光粉，並提升其熱穩定性，也開發熱穩定性佳之橘紅色螢光粉，藉由分層結構製作出高演色性之白光LED，於元件出光均勻性方面，提出新型的封裝結構(圓臺式)，藉此讓配光曲線於各角度更為均勻，本研究將藉由圓臺式封裝結合前述所合成之藍綠色與橘紅色螢光粉，預期製作出可調變色溫、高演色性與出光均勻性佳之白光LED元件，希冀可廣泛應用於白光照明，讓白光LED達到更多之應用，降低於照明上的能源損耗！

得獎感言

非常感謝中技社提供之獎學金以及給予肯定，也感謝指導教授朱聖緣老師的指導，老師提供給我們的不仅是充裕的研究資源，更培養我們勇於面對困境的勇氣以及從不同角度去思考問題的能力，讓我和所帶領之學弟妹們能夠盡情發揮；感謝我的父母總是在求學路程中給予支持與鼓勵，任我恣意發展！也感謝在求學過程幫助過我的許多人。



余 柏毅

國立臺灣大學 化學工程學系 博士畢業

研究主題：煤炭氣化多聯產化學品的各相關製程的設計、控制、與經濟分析；二氧化碳捕捉與再利用；各類製程的節能設計與強化

傑出表現

1. 國外期刊發表7篇(第一作者5篇，另有3篇投稿審核中)、國內期刊發表3篇、英文專書文章發表2篇
2. 國外研討會論文發表7篇
3. 參與專案計畫6項
4. 巴斯夫碩博士創新論文獎(2016)、巴斯夫國際夏令營臺灣代表(2017)、斐陶斐榮譽會員(2017)、臺灣化工學會論文海報佳作獎(2013)、臺大化工系軟體訓練課程Aspen Plus講師(2013-2016)、臺大化工系書卷獎(2011-2012)

自我介紹

本人2007年9月進入臺大化工系學士班就讀，期間最感興趣的即是電腦模擬所能進行的研究主題。因此推甄上本系碩士班之後，進入程序系統工程研究室(Process System Engineering Lab)學習，接受恩師錢義隆教授的指導，之後並逕升博士班，於2017年6月獲得博士學位。除了全心投入研究之餘，我也熱愛教學工作，在學期間多次擔任助教與講師。此外，我熱衷於志工服務，也曾擔任本系壘球隊的隊長。透過不同的經驗，使我培養出表達能力、領導能力、以及多面向的思考模式。

研究概述

本人的研究主題分為三個方向。第一是煤炭氣化多聯產化學品的各相關製程。於此類程序中，先將煤炭氣化為合成氣，再將其調配組成，用於生產多種不同的化學品，此部分也是本人的博士論文主題。第二是各類製程的節能設計與強化，利用進階的分離策略(如變壓蒸餾、反應蒸餾、萃取蒸餾、萃取與蒸餾複合程序等)，將共沸混合物分離。第三是二氧化碳捕捉與再利用，目標為將二氧化碳作為反應物，產生有用的化學品，藉以降低二氧化碳排放。

得獎感言

首先誠摯的感謝中技社每年提供各類的獎學金機會給學生，能夠獲得獎項，對我而言是莫大的激勵與肯定。感謝恩師錢義隆教授多年的悉心指導，也感謝系所的推薦以及十年來的栽培。未來我將更積極地繼續擴展研究的深度與廣度，希望學成之後，能有機會進入大學任教，培育更多優秀的研究生。



李 衡

國立交通大學 光電工程系所/顯示科技研究所 博四

研究主題：結構應力之優化以進一步改善氮化鎵發光
二極體量子效率

傑出表現

1. 國外期刊發表11篇
2. 國外研討會論文發表6篇、國內研討會論文發表3篇
3. 社團法人中國工程師學會教育委員會學生論文競賽-電子組特優獎(2012)、光電工程學系卓越博士獎學金(2013)
4. 參與專案計畫3項
5. 通過專利1件

自我介紹

大學考進了交通大學電子物理系，於升大三的暑假進入盧廷昌老師實驗室做量子級聯雷射(Quantum Cascade Laser)之相關專題研究，並很榮幸的能以此主題通過「國科會大專生參與專題研究計畫」之申請，開啟了正式的研究之路。進入研究所後，為進一步分析光學特性，也為實驗室建設新的量測架構，過程中也主筆了2篇國際期刊，並參加了許多大大小小的國際研討會，曾到過美國、中國、俄羅斯，並曾代表實驗室到瑞典與相關領域之研究團隊進行深度的研討。

研究概述

本研究計劃目的在於開發有效方法提升發光二極體內部量子效率。第一部分，透過優化主動區中的量子井及超晶格結構，用以降低結構應力以及缺陷密度；另外，對於傳統藍寶石基板成長之發光二極體結構，由於晶格不匹配所產生結構應力被視為抑制內部量子效率提升的重要因素，因此透過改變基板，進而降低結構應力並改善磊晶品質，期望能在藍寶石基板上成長近乎零應力之高品質氮化鎵，使其與氮化鎵基板上之發光二極體有相同出色的表現。

得獎感言

從鄉下小城鎮進入交通大學光電所博士班就讀，所有研究成果要感謝自求學以來打掃阿姨、系辦小姐、及父母的支援，與學術專業上指導教授和實驗室成員幫忙，有了大家的協助方能有今日研究的完成。此外，更要感謝世界領袖教育基金會的培育，從基本個人靜定的功夫，到做事的方法、態度，以及突破困難的勇氣及魄力。



林 聖奇

國立清華大學 化學工程學系 博三

研究主題：利用靜電紡絲與二氧化錳組裝成非對稱超級電容器並具高能量和功率密度

傑出表現

1. 國外期刊發表11篇
2. 國外研討會論文發表9篇、國內研討會論文發表12篇
3. 清華大學化工系-深圳大學高等研究院雙邊研討會論文海報展示報告優勝第一名(2017)、大東樹脂化學股份有限公司第一屆獎學金(2016)、國立清華大學化學工程學系研究所校長獎學金(2016)、國際塑膠工程師學會中華民國總會第九屆塑膠材料應用及技術論文競賽第二名(2015)
4. 參與專案計畫11項
5. 出版專書1件(奈米材料科技原料與應用，馬振基，林聖奇等人，全華圖書有限公司)

自我介紹

學生林聖奇目前就讀國立清華大學化工所博士班三年級，指導教授為馬振基國家講座教授和胡啟章教授。課業成績於碩博士班平均皆位於同年級同學的前5%，於碩士班一年級結束後選讀博士班。同時完成兩科資格考，而榮獲本校校長獎學金。目前研究著重於利用靜電紡絲與二氧化錳組裝成非對稱超級電容器並具高能量和功率密度，未來將持續努力使個人能力提升，期許自己未來能對社會有所貢獻。

研究概述

利用靜電紡絲製備奈米纖維織物(electrospun)，並將二氧化錳均勻沉積在奈米碳纖維上。在這複合電極材料上展現極佳的電容，並具有良好的循環穩定性。於非對稱超級電容器電位窗能達2.0 V，並具有極高能量和功率密度。顯示奈米碳纖維在均勻沉積二氧化錳形成之複合電極，能展現極佳之電化學表現，並具有潛力應用於未來能源儲存裝置，期望能應用於軍服裝置、生醫和抗菌織品，以及個人電子產品等方面的應用。

得獎感言

很高興能獲得今年度「中技社科技獎學金」，感謝中技社及評審委員的肯定。並特別感謝指導教授馬振基國家講座教授和胡啟章教授，鼓勵並支持我攻讀博士班，並在這幾年求學過程遇到瓶頸時，總是不遺餘力、盡心盡力的指導我，使我今天有這個機會能獲得「中技社科技獎學金」。期許未來自己能實現「發揮所長，提升個人價值，並貢獻國家與社會」。



邱 于建

國立交通大學 電子工程學系 博三

研究主題：應變閘極堆疊負電容鐵電介電層應用於低功耗記憶體與次10奈米電晶體之研究

傑出表現

1. 國外期刊發表21篇、國內期刊發表1篇
2. 國外研討會論文發表24篇、國內研討會論文發表6篇
3. 國際知名期刊獲選封面PSS-RRL, IF: 3.032(2017)、奈米元件技術研討會海報優等獎(2017)、交通大學電子所博士論文優等獎(2017)、臺灣電機電子工程協會博士論文優等獎(2017)
4. 參與專案計畫7項
5. 通過專利1件(申請中12件)

自我介紹

學生在博士班的領域研究為前瞻元件製作、前瞻元件模擬和可靠度分析等，並發表多篇相關負電容記憶體元件國際論文，並展現開發十奈米以下電晶體潛力技術，也針對閘極應變工程整合負電容鐵電堆疊薄膜技術製程與第一原理物理分析模擬，針對物理機制進行進一步的研究，很榮幸所作的相關研究能獲得工業界與學術界的青睞，目前研究成果豐碩，已發表國際期刊和研討會論文超過50篇，也期許自己的相關研究，未來能有機會實現為商用性產品。

研究概述

本研究為開發一新型多功能式記憶體，結合氧化鋯鉛(HfZrO)鐵電層和電荷捕捉層(ZrSiO)，此記憶體元件具備低功耗且操作快速之特性。包含具備低次臨界擺幅(SS<60mV/dec)、良好耐久性(>1E12 cycles)以及快速的操作速度(<20ns)，這也是目前唯一使用商用High-k材料製作成功的Low-SS memory。而SS<60mV/dec的優良特性與鐵電極化後的負電容效應(Negative Capacitance Effect)有關，此負電容鐵電記憶體元件與目前商用的記憶體元件特性相比較之下，除了有較低的元件工作電流外，元件讀寫電壓/電流切換穩定性也相當良好。

得獎感言

非常榮幸能得到中技社及評審委員的肯定，這是對學生研究成果的一大肯定。在此要感謝指導老師張俊彥教授以及鄭淳護教授，提供我良好的研究設備及足夠的經費支持，讓我有很大空間去發展研究，老師們深厚的學術涵養在研究上教導許多，並透過嚴謹務實的紮實訓練，更在博士班期間教會了我許多做人的道理，令學生受益良多。



邱俞靜

國立交通大學 永續化學科技國際研究生學程 博三

研究主題：熱退火處理對電紡絲纖維及高分子薄膜形貌轉變之影響與應用

傑出表現

1. 國外期刊發表9篇
2. 中華民國高分子學會年會學生英文口頭競賽銀牌獎(2017)、中華民國高分子學會年會海報論文競賽高分子加工組佳作(2016)、巴斯夫德國夏令營博士生臺灣代表(2016)、中華化學年會巴斯夫碩博士生創新論文獎(2015)、中華民國高分子學會年會海報論文競賽優秀(2015)
3. 通過專利1件

自我介紹

升大三的暑假，進入陳俊太老師的研究團隊裡做專題，有幸成為老師的第一位專題生，並開始學習到如何製備電紡絲，以及產生對實驗的興趣。一路從專題、碩班、再到現在的永續化學博班學程，陳俊太老師一直是我的指導老師，期間也與實驗室的同儕一同完成多項研究，也很開心能看到這些研究成果被刊登在國際期刊上。在這幾年的學術生涯有許多新知開拓我的視野，各種學術交流使我能見識許多優秀人才，希望將來亦有能力將所學延續和應用。

研究概述

高分子奈米材料因為具有諸多獨特的高功能性，近幾年被廣泛地研究，尤其是製備方法。然而後處理效應對高分子奈米材料的影響卻較少被人探討。因此本研究致力於探討熱退火處理對電紡絲高分子纖維、殼核纖維、和高分子膜形貌變化的影響和應用。經熱退火處理過後，圓柱狀的纖維與高分子殼核纖維分別會形變成半球粒子和殼核半球鑲嵌在高分子膜，此方法可用於製備複合材料，並透過選擇性移除以得到大小均一的高分子粒子，具有應用潛力。

得獎感言

非常感謝中技社提供的獎項，也感謝中技社給我這個機會得到研究獎學金。這真的是很大的鼓勵，讓我有信心繼續追求卓越、持續在研究領域上能有所突破！更感謝指導教授陳俊太老師讓我在自己有興趣的研究領域裏，給我很大的空間和機會，及許多的幫助與指導。希望未來還會產出更好的研究成果！



洪 崧富

國立臺灣大學 化學系 博四

研究主題：電催化與光電催化反應之臨場與非臨場X
光吸收及繞射光譜分析

傑出表現

1. 國外期刊發表18篇
2. 國外研討會論文發表7篇、國內研討會論文發表2篇
3. Award of Recognition in student oral presentation in material science, at “23rd User’s Meeting & Workshops, National Synchrotron Radiation Research Center, 2017”；Outstanding research in student oral presentation in material science, at “22nd User’s Meeting & Workshops, National Synchrotron Radiation Research Center, 2016”；Front cover story of Chem. Soc. Rev. Vol. 46, No. 2, January 21, 2016；Back cover story of Adv. Energy Mater. Vol. 6, No. 8, April 20, 2016
4. 參與專案計畫2項

自我介紹

在化學這個龐大的領域裏，我覺得能源是一個迫切需要且有趣的議題，於是在研究所時，我選定能源議題來做為未來的研究方向。到現在就讀博士班，我皆著重在新能源材料的開發及材料界面間交互作用的探討，經過長時間的研究，其成果逐漸受到國際知名期刊的認可。期間與眾多研究優異的研究者合作，讓我明白學術研究不只是為了拿學位的中間過程，而是在參與這世界進步的過程，期望能在接下來的研究生涯裡，在這世界的進步中貢獻一己之力。

研究概述

本研究論文著重於能源材料的開發及在光電催化反應上的協同效應。首先合成可吸收可見光的奈米金作為光敏劑並複合催化能力優異的氧化銦來增強光激發熱電洞的動力學性質及催化能力。接下來開發摻雜鐵離子的氧化鈷來大幅降低產氧反應所需電壓，利用X光吸收光譜發現鐵離子摻雜造成離子位相的改變為優異產氧反應之原因。在最後部份探討高效能磷化鈷鐵體系中的雙功能催化過程中的材料表面相變或結構改變對催化反應的影響。

得獎感言

感謝評審委員們對本研究的肯定，讓我在能源議題上的努力獲得支持，我相信獲得這份榮耀是我在這個領域上的起跑點，未來的能源只會愈來愈缺乏，此議題的突破也會愈來愈急迫，在這場科學與大自然的競賽中，未來我將更加堅定、努力不懈的奉獻自我，期許自己在科學進展上，能得到小小的突破，讓人類世界與地球環境變得更好。



張 又中

國立臺灣科技大學 材料科學與工程系 博五

研究主題：以二維材料氧化石墨烯改質觸媒進行光催化二氧化碳研究

傑出表現

1. 國外期刊發表8篇
2. 國外研討會論文發表8篇、國內研討會論文發表15篇
3. 觸媒研討會海報競賽第三名(2013)、臺灣鍍膜年會海報競賽佳作(2013)、臺灣鍍膜年會海報競賽佳作(2014)、臺灣鍍膜年會海報競賽best poster award (2017)
4. 參與專案計畫6項

自我介紹

學生在研究所期間除了協助實驗室建置執行北臺灣奈米核心設施計畫，同時擔任電子顯微鏡與氣相層析儀的管理者，從中學習如何準確且效率的跟使用者討論實驗方向，提供學理與實務建議；身為管理者更能深入了解電子顯微鏡的實務處理，亦實際參與了電子槍高壓產生源的維修以及電子束發射源的更換，這些都是寶貴的經驗。

研究概述

學生主要透過改質氧化石墨烯的表面研究光催化二氧化碳還原的效益，基本上形貌仍維持石墨烯的六角晶格結構。其氧化石墨烯的能階位置已被轉換成電化學電位的方式呈現，可以發現整個改質氧化石墨烯的能階範圍涵蓋甲醇(-0.38 V)與氫氣(-0.41 V)會進行反應的還原電位，及水氧化成氧氣的氧化電位(0.82 V)，經由光激發後的電子電洞對由價帶分離，其電洞與水反應生成質子與氧氣，躍遷至導帶的電子結合被生成的質子並與二氧化碳反應成產物甲醇與水。

得獎感言

本次榮獲研究獎學金學生倍感榮幸，最要感謝的是碩博士班的指導教授王丞浩老師，又中獲得「中技社科技獎學金」如此殊榮，及能有傑出的科學研究，都歸功於丞浩老師在又中研究所生涯中諄諄教導；更感謝家人在背後的支持、付出以及關心，又中才能專心的在學術生涯中奮鬥。謝謝你們！



張峻瑜

國立臺灣大學 材料科學與工程學系 博四

研究主題：製備及結構鑑定有機太陽能電池

傑出表現

1. 國外期刊發表11篇(其中ACS Appl. Mater. Interfaces, 2015, 7 (8), 4955-4961獲選為 ISI highly cited paper)
2. 國外研討會論文發表11篇、國內研討會論文發表1篇
3. 中華民國斐陶斐學會會員證書、專書發表2件
4. 參與專案計畫2項
5. 通過專利2件(申請中1件)

自我介紹

學生就讀國立臺灣大學材料科學與工程學系博士班。博士班期間共發表9篇國際期刊，其中有4篇為第一作者。並申請3項中華民國專利，已通過2項。曾參與過中技社在2015年出版的「太陽能電池科技現況」專書中的第七章「鈣鈦礦太陽能電池技術」的寫作。而另一本專書「X-Ray Techniques for Materials Nanoprobng: Volume II Energy Materials」(American Scientific Publisher)的第七章「Application of X-ray spectroscopies for structural characterization of organic based solar cell」已撰寫完畢，目前正等候出版。未來期許能繼續保持求知的態度，成為優秀的科技人才。

研究概述

研究分為(1)利用即時掠角入射廣角X光散射技術分析鈣鈦礦材料自溶液態轉換至最終結晶薄膜之形成機制。此部分的研究結果將可讓我們了解如何設計與製備高效率鈣鈦礦太陽能電池。(2)利用加入高分子添加劑製備光電轉換效率高達17%的鈣鈦礦太陽能電池。(3)利用掠角入射小角及廣角X光散射技術分析不同的添加物對高分子太陽能電池吸光層薄膜形態的影響，以利開發高效率高分子太陽能電池。

得獎感言

很高興能榮獲此次中技社頒發的研究獎學金。過去便知道中技社一直有舉辦各式獎助青年學子的活動以及頒發獎學金，此次能獲獎代表著中技社對本人過去研究成果的肯定。科學的進步在於不斷地延續前人的經驗和成果，進而啟發新的思維並驗證。希望中技社能繼續獎勵更多的後進，讓更多優秀的學生有發展的舞臺。



張 博鈞

國立臺灣師範大學 物理學系 博三

研究主題：可逆地控制材料磁性

傑出表現

1. 國外期刊發表10篇
2. 國外研討會論文發表2篇
3. 中華民國物理年會壁報論文特優獎、物理系研究所五八級系友獎學金、理學院優良論文獎、博碩士班優秀研究生獎學金
4. 參與專案計畫2項

自我介紹

自大四下加入林文欽老師的實驗室後，因為發現自己對做研究這件事很感興趣，實驗成功也會給我很大的成就感，加上在碩二時和老師發表了兩篇國際論文，讓我想繼續走在研究的道路上，因此在碩三時申請選讀博士班。目前負責管理實驗室各項儀器平時的運作，和負責吸附氫氣改變材料磁性這一部分的實驗研究。未來規劃繼續博士後研究，在這個領域繼續做鑽研學習，期許自己能夠有更多貢獻。

研究概述

我的研究分為兩個部分，一個是電壓控制磁性，一個是氫氣吸附控制磁性。電壓控制磁性的部分是利用氧化鋅的電致伸縮效應控制鐵薄膜的磁性。氫氣部分是研究鈷鈦合金吸脫附氫氣時，材料內部磁異向性的變化。隨著氫氣氣壓增加，樣品吸附氫氣後磁異向性會翻轉至水平方向，而且此一現象在氫氣脫附後會回復原狀。最近我們也利用克爾磁光顯微儀發現在不同的氫氣壓力之下，樣品的磁域大小和形狀都有改變，也觀察到轉變過程的細節。

得獎感言

我要感謝我的老師林文欽教授，除了提供我許多研究資源，透過許多討論誘發我很多的創意外，也對於我一開始許多表現上的不足給予指導。另外也要感謝實驗室的所有成員的互相幫忙。中技社能頒給我這份殊榮，對於我來說是莫大的肯定，讓我對於研究之路更有信心。



莊天睿

國立清華大學 工程與系統科學系 博四

研究主題：雙相流系統中氣泡／氣泡與氣泡／壁面碰撞作用力之數學模式建立與驗證

傑出表現

1. 國外期刊發表8篇
2. 國外研討會論文發表3篇
3. NE75優秀博士候選人獎學金
4. 參與專案計畫2項

自我介紹

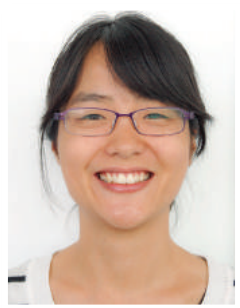
學生為桃園市桃園區人，2013年獲得國立清華大學工程與系統科學系學士學位，2017年獲得國立清華大學工程與系統科學系博士候選人資格。曾於2014、2016年赴美國普渡大學進行半年期之訪問研究。

研究概述

以分子動力模型結合紊流模型對氣泡之動力行為，提出氣泡/壁面作用力以及氣泡/氣泡作用力，並對氣液介面之動量傳遞進行討論。在以數學模型描述後，加入CFD計算，以預測雙相流中，氣泡運動之行為。

得獎感言

非常感謝中技社對於科技研究之大力支持，榮獲此獎對於本人有相當大的鼓勵與幫助。並要感謝普渡大學Hibiki教授的指導，其對學生之關懷與對研究之嚴謹，每每回想起仍收穫良多。最後要感謝本人之指導教授馮玉明教授，培養學生學術研究之能力。若無師長之教導，萬無得獎之可能。



楊 晴瑜

國立清華大學 材料科學工程學系 博四

研究主題：以大氣電漿合成金屬氧化物應用於自潔與油水分離 (Atmospheric Pressure Plasma-assisted Bio-inspired Metal Oxide for Self-cleaning and Oil/water Separation)

傑出表現

1. 國外期刊發表5篇
2. 國外研討會論文發表10篇、國內研討會論文發表1篇
3. 清大校長獎學金、DAAD-MoST Sandwich Scholarship 2016、『全球工程師』學生暑期海外實習全球產業青年領袖獎學金(2010)、Innovation Award of DuPont Career Discovery Camp 2011
4. 參與專案計畫3項
5. 通過專利1件 (申請中1件)

自我介紹

從成大材料學士班畢業，在赴加拿大遊學時找到了念研究所的動機。2011年我於清大材料所碩士班畢業，隨後加入了臺灣杜邦電子通訊事業部擔任應用工程師。兩年充實的生活並未降低我對於研究的熱忱，便毅然決然回到清大材料所攻讀博士班。過去四年也分別在工研院材化所擔任學研究生，博士班生涯的最後一年半的時間也申請到DAAD三明治獎學金至Max Planck Institute for Polymer Research作PhD Fellow，博士班研究著重在表面疏水疏油性質的有關開發應用，也與Max Planck Society 開發抗菌表面。

研究概述

本研究以大氣電漿束合成自我組裝的多階層奈米結構，此技術可在常溫常壓下操作，且適用鍍覆於各式基材上，如玻璃、金屬、紙張、高分子表面等。經氟化表面修飾後，該薄膜可呈現優異且長效的超疏水性及疏油性。此技術更進一步應用於油水分離，其多階層結構薄膜因具有極大表面積，且本質親水，若先以水浸潤，表面的奈米結構可以牢固地抓住液體層，使表面在水下不被油污所沾染，故可以重力驅動油水分離，淨化水質。

得獎感言

在材料科學翻滾了十年，從大學一路到博士班，至今仍覺得材料是個迷人的科學。它使我理解到在微觀下「缺陷」的美，也讓我更堅定與其追求完美材料的開發，不如學習適「材」適所的智慧。謝謝母校—清大材料，給予我舞臺發揮。更謝謝中技社提供許多機會鼓勵年輕學子在專業領域上精益求精，相互交流。



劉祐誠

國立臺灣科技大學 化學工程系 博三

研究主題：高效甲烷碳-氫鍵活化之觸媒開發研究

傑出表現

1. 國外期刊發表12篇
2. 國外研討會論文發表13篇、國內研討會論文發表13篇
3. 國際學術評審委員(Energy Technol., IF: 2.789; ChemCatChem, IF: 4.803)、臺灣奈米影像暨奈米新詩創作競賽『特別獎』暨『奈米創意影音組第一名』(2015)、中華扶輪教育獎學金(2015~2016)、臺灣科技大學『工程學院優秀青年』(2016)、團隊獲美國國務院主辦-第三屆魚客松(Global Fishackathon)競賽『世界冠軍』(2016)、臺灣化學工程研討會同時獲觸媒及反應工程組與電化學技術組『海報競賽優勝』(2016)
4. 參與專案計畫10項
5. 通過專利1件(申請中3件)

自我介紹

學生於奈米材料與能源相關研究著墨多年，善長材料合成、鑑定及臨場光譜分析，並以統計軟體結合實驗設計有效分析實驗系統，從基礎科學走到實質產品製程與應用；同時，學生具有跨院系的專業設計經驗與背景，讓學生在與同儕競爭時具有多一份經驗與優勢。在經歷漫長的求學、創業與工作歷程，學生不斷精進自己發現問題、分析現象、解決問題及溝通協調的能力。多年來受國家栽培，希望將來有機會能貢獻一己之力，回饋國家與社會！

研究概述

學生近期研究方向以甲烷的催化與應用為主，做為天然氣的主要成分之一，甲烷豐富的產量使之成為具有發展潛力的燃料轉換來源(生產氫氣、合成氣或C1、C2化學品)。然而，其轉化與產物的選擇率是做為工業上應用的挑戰，最大困難來自於缺乏有效的觸媒與了解其催化過程中的反應機制。在實驗室研究團隊中，我們發展高效金屬氧化物觸媒，針對甲烷催化反應進行研究，結合臨場光譜分析技術，讓我們對觸媒材料與催化過程中有更深入的探討與認識。

得獎感言

很榮幸能夠獲得中技社所有評審委員的青睞，獲此殊榮，無疑是莫大的鼓勵與肯定，由衷感謝研究團隊林昇佃與江志強兩位老師的指導，在跨領域的團隊合作中，讓我以更寬廣的思維去發掘研究的可能性，也感謝所有在研究路程中幫助過我的同儕及學弟妹，投身研究除了需要熱忱之外更需要家人的支持，最後，感謝父母一路上的用心栽培！



蔡 政庭

國立臺灣大學 光電工程學研究所 博五

研究主題：雙模雷射二極體第五代移動毫米波無線光
纖接取網路

傑出表現

1. 國外期刊發表30篇
2. 國外研討會論文發表23篇、國內研討會論文發表6篇
3. 臺灣光電科技研討會學生論文獎(2014-2016)
4. 參與專案計畫3項

自我介紹

學生於2012年取得國立陽明大學生醫光電研究所碩士學位，期間研究相位偵測式表面電漿波共振顯微系統，畢業後進入臺灣大學光電工程學研究所攻讀博士班並於2017年7月畢業。我的研究為探討無色單/雙模直調光源應用於光纖有線與毫米波無線整合傳輸網路之可能性。就讀博士班五年來共於電子電機工程應用與光學領域發表30篇國際期刊論文，23篇國際研討會論文及6篇國內學術會議論文，並獲得3個國內學術會議最佳學生論文獎的殊榮。

研究概述

我的研究為整合毫米波無線與光纖有線網路系統給予未來第五代行動通訊系統使用，並以單模與雙模注入鎖定式無色雷射二極體與垂直共振腔面射型雷射建構38與60 GHz之雙模光源作為傳輸媒介。在目前研究中，我首次以VCSEL作為傳輸光源建構毫米波光纖整合系統，並研發毫米波中心載波抑制技術，大幅提升毫米波訊號於自由空間傳輸能力。我們所做的研究在直調雙模光源式全光產生毫米波系統無論是傳輸位元率與綜合傳輸距離皆為目前最佳紀錄。

得獎感言

非常榮幸也感謝中技社對我研究上的肯定，讓我有機會獲得本屆「中技社科技獎學金」的研究獎學金。特別感謝我的指導教授林恭如博士，在您身上學到許多做研究應該有的態度以及堅持不懈的毅力，並且我也感謝我的父母及弟弟，願你們一起與我分享這份喜悅與榮耀，並且一切平安健康。



鄧 喬乙

國立成功大學 化學工程學系 博六

研究主題：氧化石墨烯奈米粒子之光致螢光機制探討

傑出表現

1. 國外期刊發表8篇(第一作者3篇、第二作者5篇)
2. 國外研討會論文發表1篇、國內研討會論文發表8篇
3. 臺灣化學工程學會第61屆年會英語專題報告競賽優勝獎(2014)及第63屆會專題報告佳作獎(2016)、長興材料獎助學金(2016)
4. 參與專案計畫5項
5. 通過專利1件(申請中2件)

自我介紹

學生由高職開始到進入博士班研究皆是念化學工程，化工研究之於我就如人生的北斗七星，指引我到無數嶄新奇妙之處。研究的主題也從觸媒、太陽能電池、光觸媒到螢光粉，研究過程中有解決問題的成就感也有數度無法突破困境的窘迫，但有了老師與實驗室同儕的帶領，使我在學術中時有長進，研究態度越發嚴謹。目前研究著重氧化石墨烯奈米粒子的螢光量子效率提升與機制探討，重要研究成果發表於國際知名期刊，Nanoscale (2017, 9, 8256-8265)與Journal of material Chemistry C (2015, 3, 4553-4562)。

研究概述

由碳、氫、氧元素所組成的石墨烯螢光材料，是具有優異物理與化學特性的半導體。將石墨烯轉變成氧化石墨烯粒子，相較於有機螢光染料和傳統半導體量子點，氧化石墨烯粒子不只具備光學穩定性，更有低毒性與高生物相容性的優點。為使螢光粉的螢光量子效率能進一步提升，本團隊發展出增強碳共軛性質而產生電子共振效應的氮參雜氧化石墨烯量子點，大幅的提升螢光量子效率。此結果有望成為全球無毒螢光粉研究的新趨勢。

得獎感言

非常感謝能夠榮獲得本年度「中技社科技獎學金」的研究獎學金。我的研究成果受到認可，完全歸功於我的指導教授鄧熙聖老師對我耐心的指導，若非鄧教授嚴謹的學術態度與包容力，我這個資質平庸的學生絕難有進步。我親愛的家人和實驗室的夥伴，也都是我研究中最重要的人，這個獎，是我身邊的貴人們在此地開的花，我也將用甜美的果實來回饋給他們及社會。



簡 均祐

國立成功大學 光電科學與工程學系 博四

研究主題：以氬氙雷射全息曝光法製做快速響應之液晶相位調製器

傑出表現

1. 國外期刊發表6篇
2. 國外研討會論文發表9篇、國內研討會論文發表2篇
3. 創新創業激勵計畫入選40團隊、中華民國液態晶體學會年會暨研討會液晶技術組學生論文獎(2014)
4. 參與專案計畫4項

自我介紹

均祐於成功大學光電所碩士班就讀時，就已確認自己對研究領域有高度興趣，於是決定碩士班畢業後繼續攻讀博士班。博士班研究主題為利用氬氙雷射全息曝光製作液晶快速響應之液晶元件，就讀博士班期間，我在研究上秉持著積極進取的態度，並藉由參加國際研討會與國外學者接觸並提升自己的國際觀，且藉由與產業界的合作案了解現今液晶顯示器領域的技術發展，未來我期許自己能在液晶顯示器領域有更多貢獻，成為傑出的專業研究人才。

研究概述

液晶元件的響應時間是評估元件效能的一項重要物性參數，其可藉由在液晶層間建立光聚合物結構來改善，但聚合物在液晶層中將產生光散射造成元件使用上的不便，本研究主要目的是利用全息曝光方式限制聚合物網絡的生長以改善光散射之缺點，目前研究已成功製作超快速響應之液晶相位調製器，該方式可進一步應用於製作不同種類的快速響應液晶元件，如近紅外光相位調製器與液晶透鏡等，其不論在顯示器或光通訊領域皆有發展之潛力。

得獎感言

非常開心與榮幸能獲得「中技社科技獎學金」的研究獎學金，感謝中技社對學生的肯定。在就讀碩士班與博士班期間，感謝我的指導教授許家榮博士在研究上的指導，有老師對我在實驗想法上的支持，讓我可以盡情地做研究，也感謝實驗室努力進行實驗的夥伴。感謝家人鼓勵與支持我就讀博士班，讓我學習與成長很多。



涂宗賢

臺北城市科技大學 電機工程系 大四

創意作品：電動車電池組之效能提升系統

傑出表現

1. 國內研討會論文發表2篇
2. 臺灣國際創新發明暨設計競賽發明類社會組銀牌(2017)、第45屆瑞士日內瓦國際發明展金牌(2017)、經濟部技術處搶鮮大賽創意發想類優選(2017)、第11屆盛群益HOLTEK MCU創意大賽安全/防盜應用組佳作(2016)
3. 通過專利2件

自我介紹

進入臺北城市科技大學就讀，竭盡全力學習讓自己三年期間課業名列前茅，並且善加規劃與利用時間，使我學會高階微控制器Cortex-M之控制技術與多項程式語言。很幸運熟識教授並跟隨教授學習創新發明之觀念與方法，利用所學知識，導入創意與專利概念，開發新式且實用之「電動車電池組之效能提升系統」，並參賽獲得國際發明展的銀牌。我的夢想即是在電機領域裡能夠成為一位專家，並具有務實創新能力，未來進入社會之後，對國家社會有所回饋與貢獻。

創意概述

本創作結合智慧綠能管理與電力電子控制技術來延長電動車電池組之使用壽命，以提升電動車之續航力。電動車電池組係由單顆鋰電池逐一串/並連而成的，其中串連之電池組會因某一個電池組故障或電力先用罄而阻擋其餘正常電池組輸出電力，以致降低整體電池組之效能與使用壽命，同時也降低電動車的續航力。本創作可快速搜尋、辨識與隔離串連電池組中之故障電池組，並重新串接剩餘正常電池組，使其能輸出剩餘電力，達到延壽與增加續航力之目的。

得獎感言

很榮幸能夠獲得此次中技社頒發之殊榮，能有今日的成就要深深感謝本校電機系魏朝鵬與楊文治兩位教授的磨練與指導，讓我在大學求學這幾年能習得更多、更深且實用的專業知識與技能，使我能夠在學期間與教授們開發新式且實用之「電動車電池組之效能提升系統」。未來我將繼續努力學習，專心於研究並提高自我學習能力，將此一實用技術應用於產業上，使大眾都能受益。



張 家豪

國立臺北科技大學 材料科學與工程研究所 碩二

創意作品：新型多孔微球及其複合材料

傑出表現

1. 國外期刊發表2篇
2. 國內研討會論文發表1篇
3. 光寶創新獎技術組金賞(2017)
4. 參與專案計畫1項
5. 專利申請中1件

自我介紹

學生張家豪，目前就讀臺北科技大學材料所碩士班，大三時因興趣加入李嘉甄教授的實驗室進行有關奈米粉末分散之專題研究，此過程不只讓我在研究上還有做人處事上都有很大的進步。以大學時期對於粉末分散技術的研究做為基礎，碩士班期間致力於開發新型複合多孔材料之合成方式，以改善目前現行的繁瑣製程。期許自己未來能夠有開闊的心胸，持續學習新知識。

創意概述

因為傳統的多孔材料製程步驟繁瑣難以量產，令我在剛開始研究時就面臨極大的挑戰，探索解決方法的過程中，從無數次的失敗中不斷進行改善，還有聽取老師的建議修正忽視的問題，最後我使用梯型高分子做為關鍵原料，一端具有較多的親水性分子；一端具有較多的親油性分子，可以在乳化過程中自行產生孔洞，並且能夠因應需求來調整孔洞之大小。將各種功能性粉末與此高分子做結合後，就能合成出各式複合多孔材料，未來在生醫、能源及環保領域上都能有進一步的貢獻。

得獎感言

首先要感謝中技社以及評審委員們給予的肯定，讓我能夠獲得此獎學金。在此要感謝從大學一路指導我到碩士的指導老師李嘉甄教授，在過程中不斷鞭策我並提供專業素養與知識教導，讓我學習到許多新知識並持續的成長。最後要感謝我的家人以及所有幫助過我的人，謝謝你們。



陳 昀 君

國立臺灣大學 電機工程學系 大四

創意作品：應用深度學習於惡意流量偵測

傑出表現

1. 參與國科會計畫1項。
2. 經濟部工業局通訊大賽，SDN/NFV創新應用競賽入圍決賽(2017)、NTU Triangle Alliance APP Creativity Contest、International Electromagnetic Proficiency Test、臺灣大學電機工程學系大學部精專獎第二名

自我介紹

我是陳昀君，目前就讀於國立臺灣大學電機工程學系。在大學期間修習計算機程式課，在這門課中學習到如何利用寫程式的方法來完成任務。從這門課中，開啟了我對於計算機科學知識的熱情。為了提升計算機科學的理論基礎，我修了許多數學方面的課，例如線性代數，離散數學以及機率與統計等課程。有了這些數學理論基礎，皆助於我在研究上研讀論文，分析問題，以及解決問題的能力。此外，我也修了許多程式方面的進階課程，例如資料結構與程式設計，計算機結構，網路與多媒體實驗等，這些是從實作的角度來分析程式的運作。有了以上的實務經驗，以及相關知識，加上對於機器學習演算法的了解，我在這學期進行了以深度學習的方式來偵測惡意流量的研究。在這個研究中，我設計了新的類神經網路，以及提出新的演算法來解決資料量分佈不均造成梯度稀釋的問題。

創意概述

我設計新的類神經網路架構，提出一個新的演算法，以階層的形式來分類資料。這樣的設計有助於神經網路從數據中學習知識，改善資料分布不均的問題。此外，為了達到即時偵測，我們設計了只拿部分流量來偵測的實驗。實驗中，我們的模型可以以非常高的準確率來偵測惡意程式的潛在。不僅如此，為了展現深度學習的泛化能力，我測試了一些未經我們模型訓練過的樣本。實驗結果發現，模型仍然可以以相當高的準確率偵測惡意程式的存在。

得獎感言

這次能得獎真的要感謝非常多的人，除了學長們的幫忙，更要感謝林宗男教授一路上的指導，在我遇到問題時提供協助。此外，也感謝中技社提供獎學金，感謝評審們的賞識。



趙 芸

實踐大學 工業產品設計學系 大四

創意作品：Green Community app綠能社區節能軟體

傑出表現

1. 國內期刊發表1篇
2. 參與國內展覽6場、國外展覽1場
3. 紫金獎競賽入圍、參與國際工作營2場、參與國際交換計畫赴德國交流

自我介紹

學生出生於臺北，從小喜歡美術、音樂。個性認真熱心、擇善固執。大學進入實踐工業產品設計學系，學習了許多產品細節與處理方式，對設計產生了濃厚的熱誠，得知設計便是在學習解決問題、也需要與人溝通的能力、美學的能力。大四獲得赴德國科隆設計學院交換的機會，擴大了我的視野與觀點。多次的佈展經驗讓我知道合作的重要性；國際工作營的參與讓我增廣見聞，更知道自己的不足。我隨時準備好面對新挑戰，學習更多東西！

創意概述

Green community app有別於一般的計算電量軟體，以「社區居民」為中心，透過物聯網，app裝置便可以隨時控制自己家中的電器用品，也可觀察目前電費與各物品的關係。同時可以檢視社區用電狀況及管理，提升社區整體規劃。當居民以正確的方式推廣節能行為、或是改善用電方式，除了可以省錢，也可通過app兌換社區管理費、社區公車免費搭乘、公共垃圾袋等，間接減少人們執行環保的渺小無力感，讓環保不再是沒回饋，最終達成創造節能、社區團結的成就！

得獎感言

身為設計系的學生，能夠獲得「中技社科技獎學金」之創意獎學金的殊榮，心中除了感激也含有些微驚訝。查看以往獲獎紀錄者，多是以電機、工程、化學、材料為專長，並無設計專長者。因此倍感殊榮，也知道大環境對於設計的接受度提高了。非常感謝實踐大學林柏涵老師的用心指導，也感謝中技社及評審們在第二階段的指導建議與肯定。最後感謝我的家人永遠支持我，讓我放手去追求自我挑戰。期許未來我能夠為地球環境盡一份心力，莫忘初衷。



龔 瑞清

國立臺灣大學 機械工程學系 碩二

創意作品：開發以布拉格光纖光柵感測器為基礎之多點與即時量測系統並應用於應變、溫升、位移及振動之精密量測

傑出表現

1. 國外研討會論文發表1篇、國內研討會論文發表1篇
2. ICI & MNHTE & STTA & 旭泰科技論文獎高速主軸實作類「金獎」(2017)、中興大學暨程泰集團「精密工具機與自動化技術」專題實作競賽研究生組「第二名」(2017)、Taiwan AOI Forum & Show創新獎「佳作」(2017)、Matlab/Simulink技術與應用文章/論文徵文比賽「優選」(2017)、Taiwan AOI Forum & Show 創新獎「第一名」(2016)、ICCPE & ICI & 旭泰科技論文獎高速主軸實作類「金獎」(2016)、中興大學暨程泰集團「精密工具機與自動化技術」專題實作競賽研究生組「第一名」(2016)

自我介紹

臺大機械系畢業後有幸在馬劍清老師的耐心指導下做研究，在這兩年內除了學習到如何以最嚴謹的態度做研究之外，還學習到如何呈現研究成果，讓我在面對各種競賽上更有自信。研究過程中，我體認到越簡單的事物反而越不簡單，馬老師也總是提醒我要將研究推到極限，使得我也時時刻刻提醒自己將自己推向那沒有極限的極限，過程中盡力而為，不管結果如何，都要謙虛的面對，總有可以改進與進步的地方，未來我會持續努力。

創意概述

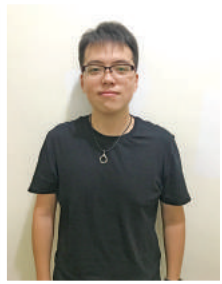
各領域皆朝智慧化發展，當中最為關鍵的就是精確的「資料」，如何從中看出「資訊」更是價值所在，而「感測器」正是資料擷取的關鍵。本研究自行開發光纖光柵即時量測系統，用以量測待測物的溫度與熱應變，進而量測出熱膨脹係數。並開發以多光柵光纖為基礎進行主軸熱伸長的量測。此外，也將光纖黏貼於銑削工件，直接量測銑削工件加工過程中的溫升、變形以及振動等加工歷程。而因為光纖訊號同時包含許多資訊，將可取代大多數的感測器。

得獎感言

首先感謝中技社評審老師們的肯定，能夠獲獎我感到相當榮幸，未來我將持續學習科技新知，期許自己能夠為國內的工業界有所貢獻。再者感謝指導教授馬劍清老師，感謝您兩年來的耐心教導，帶給我相當扎實的研究能力與態度，也讓我更有自信面對未來。最後感謝家人，沒有你們一路以來的支持與鼓勵，也不會成就今日的我，謝謝。



王彥翔



郭泓毅



李冠潔

王彥翔 國立臺灣師範大學 光電科技研究所 碩一

郭泓毅 國立臺灣師範大學 全球經營與策略研究所 碩一

李冠潔 國立臺灣師範大學 光電科技研究所 碩一

創意作品：非侵入式植物病毒檢測技術

傑出表現

1. 發明聯盟協會(IFIA)發明與創新博覽會最佳發明獎、香港國際發明展金獎、莫斯科阿基米德國際發明展金獎(2017)、TIIDF TIKI金牌獎、生技產業創新創業人才培育計畫 生技創新創業農技組銀獎、創新創業激勵計畫(FITI)第1梯次創業團隊創業潛力獎(2017)
2. 通過專利1件

團隊介紹

本團隊是由師大光電所及師大全球經營與策略研究所碩士生所組成，是一支整合了技術及商業人才的新創團隊。

王彥翔：就讀國立臺灣師範大學光電工程研究所碩士，專長為資料處理、光學架構、大數據分析、類神經網路。

郭泓毅：就讀國立師範大學全球經營與策略研究所碩士，專長為整合行銷、市場分析、策略制定與企業危機管理。

李冠潔：就讀國立臺灣師範大學光電工程研究所碩士，專長為資料處理、大數據分析、電路設計、產品設計。

創意概述

本團隊採用雷射激光發射暨接收裝置之新科技，應用於蘭花產業之病毒檢測，以創新科技解決目前蘭花產業在自我病毒檢測上所遇到的困難，透過不斷提升病毒種類的辨識率及準確率，讓臺灣的蘭花產業能更有效地及早篩檢出受感染之蘭花，提前防範及杜絕，進而提升臺灣蘭花的優勢競爭力。

團隊得獎感言

非常感謝中技社給予我們這次的機會，也非常謝謝各位委員們的建議以及肯定，能獲得這份殊榮是對於我們最大的鼓勵！我們也由衷感謝國立臺灣師範大學謝振傑教授的指導，以及臺師大在這一路上給予的種種資源與幫助！這次的經驗對我們團隊是一劑強心針，讓我們知道我們走的路是正確的，也讓我們有信心能繼續努力與進步，為社會帶來更多貢獻！



吳宗霖



黃盛焯

吳宗霖 國立臺灣大學 工程科學及海洋工程學系 碩二

黃盛焯 國立臺灣大學 工程科學及海洋工程學系 博七

創意作品：船艏振動翼節能系統

傑出表現

1. 國外研討會論文發表1篇、國內研討會論文發表1篇
2. 東元Green Tech 國際創意競賽冠軍(2016)

團隊介紹

團隊指導：邱逢琛教授、郭振華教授、蔡進發教授

本團隊長期著重自主發展船舶運動操縱控制、無人水下載具相關技術。本團隊成員也是本研究領域國內和國際賽事的常勝軍，參加過東元Green Tech國際創意競賽(冠軍)、日本國際水下機器人競賽(冠軍)、中國國際水中機器人大賽(一等獎)、臺灣經濟部通訊大賽(最佳校園菁英獎)等。團隊成員之能力亦獲得國內企業之肯定，目前合作夥伴有：臺灣國際造船、龍德造船工業等優秀企業。

創意概述

本作品為一種安裝於一般商船船艏的新型節能裝置，可以有效地擷取波浪中的能量，並將其轉換為可用之輔助推進系統。透過計算流體動力分析軟體探討振動翼推進性能受波浪環境的影響，並找出振動翼之不同史特豪數(St)與最佳入流攻角間的關係，藉此開發出不規則波中的改良控制法則，改良後不只推力係數提升1.93%，且總效率及艏翼縱搖效率亦分別提升4.29%及7.39%，經過利用船模水槽試驗結果顯示在有波浪的實驗條件能源節省可達6.2%到18.9%。

團隊得獎感言

特別感謝指導教授和團隊所有人齊心協力，本研究才得以順利完成，因此能獲得中技社的獎學金。獲獎不僅是非常珍貴的經驗，本獎項更鼓勵我們整個團隊中的所有成員以及本團隊所有協助研究進行的夥伴，因為主辦單位特別重視綠色科技、節能減碳的議題，讓我們團隊知道臺灣綠色能源領域還有人重視，讓我們更有目標繼續前進。



李文志



張育軒

李文志 國立中山大學 醫學科技研究所 碩三

張育軒 國立中山大學 醫學科技研究所 碩二

創意作品：可攜式手搖飲品之碳水化合物濃度檢測系統

傑出表現

1. 國際期刊發表1篇
2. 國際研討會論文發表2篇、國內研討會論文發表2篇
3. Synopsys ARC盃海峽兩岸電子設計大賽佳作(2017)、TJCAS研討會最佳海報實作設計獎(2016)、MorSensor無線感測積木創意應用設計競賽佳作(2015~2016)

團隊介紹

李文志：我出生於雲林，碩士班研究領域專攻生醫系統晶片設計，目前已完成一前端訊號讀取晶片，很榮幸在指導教授羅錦興老師和林遠彬老師的鼓勵下，參與許多比賽與國內外論文發表，老師給我們良好的學習環境與研究氣氛，非常珍惜在這種學習氛圍中成長，期許在未來能發揮自我所能，回饋家庭、學校與社會。

張育軒：學生在碩士班期間致力於研究電生理訊號的相關議題，透過自行推導的雜訊抑制演算法來提升量測到的電訊號品質，並期望未來可以將該演算法轉換為數位電路並整合前端類比電路製作成一顆ASIC晶片，最後再結合手機APP、雲端處理等平臺來完成一系列的即時生理監測系統。

創意概述

在糖分容易超標的生活型態下，我們期望能夠透過更直覺更明確的方式幫助使用者判斷並控制含糖飲料的攝取，藉此降低國人罹患糖尿疾病等慢性疾病的風險，提升國民的健康。因此本系統實現一套易操作、且低成本的糖分濃度檢測之平臺，幫助人們能自行在一般環境中做檢測，透過檢測出來的數據讓使用者了解自身的糖分攝取狀況。考量到使用者多半需要長期的監測與控制，因此在感測裝置上朝可重複使用為開發基準，相較於一般的一次性檢測裝置，對於環境效益來說更具友善。

團隊得獎感言

由衷地感謝評審委員們的建議與肯定，讓我們獲得「中技社科技獎學金」此份殊榮，感謝這一路以來幫助我們的老師，特別是賴信志老師，常在研究無助時引領我們方向；並感謝實驗室的文河學長，時時敦促學弟妹進度與狀況，以及實驗室夥伴的互相學習。最後要感謝我們的家人，有你們在背後的支持，才成就我們今天一切，這份喜悅與你們分享。



李梯群



陳敬仁



胡庭凱



陳韻文

李梯群	國立臺北科技大學 資源工程研究所	碩三
陳敬仁	國立臺北科技大學 資源工程研究所	碩二
胡庭凱	國立臺北科技大學 資源工程研究所	碩二
陳韻文	國立臺北科技大學 資源工程研究所	碩二

創意作品：無水泥之綠色環保混凝土

傑出表現

1. 國外研討會論文發表44篇(近5年)、國內研討會論文發表16篇(近5年)
2. 臺北國際發明暨技術交易展鉑金獎(2017)、臺北國際發明暨技術交易展金牌獎(2017)、臺北國際發明暨技術交易展銀牌獎(2017)、光寶創意獎(2016)
3. 參與專案計畫37項(近5年)
4. 通過專利3件

團隊介紹

本研究團隊為北科大資源所資源處理實驗室，發展無機聚合技術近二十年，致力於廢棄物及工業副產物資源化再應用之技術，近年來此技術已逐漸發展成熟，並將此技術推廣及應用，配合政府綠能政策，期望有效減低碳排放及增加廢棄物和工業副產物資源再利用的可行性，達到地球資源永續的效益。

創意概述

近年環保議題受到各界重視，水泥產業會排放大量CO₂，臺灣每年約高達820-1600萬公噸以上CO₂排放量。若能開發低二氧化碳排放之綠色環保膠結材料，可有效解決CO₂排放量過高之問題。本團隊選用工業副產物與廢棄物作為綠色環保膠結材料之原料與鹼性溶液配方混合後，開發出可替代傳統波特蘭水泥之新型態綠色環保膠結材料，進一步製成「無水泥綠色環保混凝土」，可達到廢棄物資源化及低二氧化碳排放之目標，創造兼顧環保及社會發展之節能減碳新型態材料。

團隊得獎感言

首先非常感謝中技社對於本團隊的肯定，讓我們榮獲這次的獎項，並感謝指導老師鄭大偉教授及實驗室歷屆學長姊於此相關領域研究上的指導及協助，才能使本研究團隊有現階段的成就，相信此技術於綠能產業上持續的研究及精進仍是勢在必行的，未來期望能為環境及社會盡一份心力，而有所貢獻。



孫凡耕



楊正彥

孫凡耕 國立臺灣大學 電機工程學系 大四

楊正彥 國立臺灣大學 電機工程學系 大四

創意作品：人工智慧號誌燈--以深度學習輔助交通號誌切換解決道路塞車問題

傑出表現

第一屆「世界微積分大賽」冠軍

團隊介紹

孫凡耕

擁有豐富的各式軟硬體程式語言的能力，也曾有多次於開發版上獨立開發專案的經驗。除此之外，對於machine learning和deep learning的領域也相當有涉獵。曾任電機系系學會學術部部長，主辦過「2017 MakeNTU創客松」，為臺灣規模最大的軟硬體整合的黑客松競賽活動。

楊正彥

除了有影像辨識方面的專業知識外，也多次到管理學院修習「行銷管理」和「使用者經驗」等課程，並結合電機系領域探索消費者需求，完成一個更完整的專案題目。曾任電機系系學會活動部部長，主辦過多次電機系大型學生活動。

創意概述

隨著汽機車的普及率越來越高，塞車成了許多臺灣人日常生活的問題，同時也造成大量外部成本。因此我們的研究著重在如何解決結構性塞車，亦即是整個道路系統並未有效的考量交通流量及特性所造成的塞車。雖然以往已有針對單一道路或十字路口的硬體改良的作法，然而我們希望能夠將每一個路口彼此的交互作用都納入考量，因此我們設計了一個透過大量的數據收集以及人工智慧運算的模型，並藉由動態、自適應的方式調整交通號誌，以達到有效疏通擁擠的路段的分法。

團隊得獎感言

感謝中技社給予我們的肯定，我們感到非常榮幸能獲此殊榮，同時也感謝我們的指導教授黃鐘揚教授、簡韶逸教授及吳肇欣教授不辭辛勞的教導。我們也由衷感謝許晉嘉和張晏祐同學的相關協助，最後感謝身邊所有親朋好友的鼓勵與支持，希望未來我們能更進一步落實想法，為社會貢獻一己之力。



高旻聖



林孟穎



黃文宣



駱致融



李季洵

高旻聖 國立勤益科技大學 機械工程系 大四／林孟穎 國立勤益科技大學 機械工程系 碩二
黃文宣 國立勤益科技大學 機械工程系 碩二／駱致融 國立勤益科技大學 機械工程系 碩一
李季洵 國立勤益科技大學 機械工程系 大四

創意作品：進給系統潤滑特性最適化之研究

傑出表現

1. 國內研討會論文發表2篇
2. 經濟部技術處搶鮮大賽系統整合實作類亞軍(2017)
3. 專利申請中2件

團隊介紹

團隊指導：陳紹賢教授

林孟穎：本計畫的執行者，與指導教授討論研究主旨，且詳細的規劃每一個步驟，軟體開發、程式撰寫，並且進行機電整合，架設感測器於實驗平臺中，量測數值並進行運算，再利用微控制器針對平臺進行注油動作，兼顧環保節能概念，使平臺精度維持於一定之水準。

高旻聖：文獻蒐集、治具開發製作，撰寫簡報並在中技社口試中擔任報告者。

李季洵：協助程式上的撰寫、除錯，零件採購及組裝系統平臺。

駱致融：文獻蒐集、規劃實驗設計流程、規劃時間排程及協助測試人員。

黃文宣：機械製圖繪製、實驗操作量測數據，美工及海報製作。

創意概述

本研究主要目的為探討進給系統潤滑特性最適化時機，於不同載重與不同進給速度的實驗條件下，利用Raspbreey Pi開發一套人機介面監測伺服馬達之電流與扭矩值，得知伺服馬達的電流扭矩變化再透過Stribeck摩擦模型建立潤滑模組，最後透過輸入不同載重與不同進給速度的條件下運算出最適當的潤滑時機，並且透過長時間的驗證，在不影響進給系統精度狀況下，供油次數改善了80%以上，節省了潤滑油的成本以及響應環保，並可以給予業界一個適當的供油系統。

團隊得獎感言

感謝中技社評審委員給予本團隊的肯定與賞識，使本團隊能榮獲此獎，特別感謝指導教授陳紹賢老師給予建議與指導，深深體會到學理與實作的重要性，從加工製造、電路配置、軟體撰寫到整合匹配都是團隊們辛苦努力完成，學著發現問題並且解決問題。在未來的研究能繼續精進，為產業界貢獻一份心力，再次感謝中技社給予好評，本團隊致上最高敬意。



黃雅歆



王鈺棋



柯 翰

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王鈺棋 國立成功大學 光電科學與工程學系 碩一

柯 翰 國立成功大學 光電科學與工程學系 碩一

創意作品：多功能性無差別擊殺細菌之光熱環保材料

傑出表現

1. 國內研討會海報發表1篇，國外研討會海報發表1篇
2. 元培醫大五創元年創意競賽創意獎、H.I.T for Asia生醫黑客松齡時啟動團隊第二名、第一屆立創光電盃應用論文競賽銅質獎、功能性材料研討會，口頭報告第二名(2017)
3. 參與專案計畫1項

團隊介紹

團隊指導：黃志嘉 教授

黃雅歆：設計了實驗的合成參數，並操作穿透式電子顯微鏡(TEM)拍攝奈米粒子的構型。也在光學的光譜量測上，發現材料具有全波段的光學吸收。在第二階段口試中擔任主要報告者與回答問題。

王鈺棋：在實驗過程中主要操刀，並對材料的粒徑大小、表面電位做初步研究。此外，也利用了人類正常膀胱上皮細胞(SV-HUC1)對材料做毒性實驗，以確保材料對於生物體是安全的。

柯 翰：負責應用端的工作，確認材料的實際應用目的，並負責進行近紅外光雷射光熱轉換實驗以及微生物相關的抗菌實驗，提供抗菌等相關研究資料與知識。是我們最主要的軍師。

創意概述

本創意($\text{ITO@Fe}_3\text{O}_4$)具有利用一般日光即可驅動產生高熱殺死細菌的光物理特性，可以有效改善湖水中惡劣的環境，甚至可以減緩養殖漁業抗生素的使用，以避免產生具有抗藥性的超級細菌而引起更嚴重的問題。此外，利用磁鐵即可將 $\text{ITO@Fe}_3\text{O}_4$ 回收，經過淨化處理後，可再進行下一次的抗菌。

團隊得獎感言

感謝團隊指導黃志嘉教授，適時地給予我們專業知識的提點與技術上的指導，讓我們都能夠結合各自的專業能力合作設計出這項創意作品。感謝評審在口頭報告中給予的建議和想法，讓我們可以注意到其他重要的問題以改善目前的設計。最後，非常感謝評審對我們團隊的肯定以及中技社提供這樣的機會，使團隊能獲得本次創意獎學金的殊榮。



楊景旭



陳建民



任恩

楊景旭 國立臺灣大學生醫電子與資訊學研究所 博三
陳建民 國立臺灣大學生醫電子與資訊學研究所 碩二
任恩 國立臺灣大學生醫電子與資訊學研究所 博五

創意作品：Monicar-新世代智慧行車安全系統

傑出表現

1. 國外研討會論文發表7篇、國內研討會論文發表10篇
2. 國立臺灣大學第十二屆臺大創新競賽評審團銅獎、臺北醫學大學國際發明獎貳獎(2014)、首屆兩岸四地大學生創新創業大賽亞軍、武漢創業項目大賽優等獎(2015)、入選第一屆矽谷科技創業培訓計畫
3. 通過專利4件

團隊介紹

林啟萬教授：團隊指導

楊景旭：影像處理與大數據分析

陳建民：軟硬體系統整合、產品電路設計以及雛型外觀設計

任恩：產品概念發想、開發疲勞演算法與系統整合

創意概述

本團隊開發的MoniCAR收集駕駛數種生理訊號，回傳到系統即時檢測，提供駕駛者主動式的安全保護，將肇事可能最小化。本團隊開發的前端感測器、接收端、終端訊號處理系統，在駕駛身體發生狀況時立即給予警示，並配合雲端連線的資料庫將資訊在第一時間通知業者。

後端分析系統則定期提供業者分析報告，給予排班的調動建議。分析報告還可以提供業者駕駛基本健康狀況資訊。我們認為員工是業者最重要的資產，此系統提供業者以關懷駕駛的角度，讓有異狀的駕駛去醫院做進一步的檢查，確保其健康無虞。如此將可大幅降低因酒駕、生理狀況、疲勞駕駛所造成的車禍機率，確保乘車者行車安全。

團隊得獎感言

首先感謝中技社的肯定，我們對於團隊從眾多競爭者中勝出深感欣慰。團隊開發系統的過程中歷經許多困難與挫敗，幸好後來陸續有所突破，問題逐一解決。感謝組員們的互相扶持，大家在這條開發的路上因而不感到孤單。感謝指導教授給予的指導，總在我們失去方向的時候指點迷津。希望未來這套系統能夠真正應用在駕駛的日常交通上，降低事故發生率，提升人類福祉。



潘劼克



劉宇望

潘劼克 國立清華大學工業工程與工程管理系 大三

劉宇望 國立清華大學工業工程與工程管理系 碩二

創意作品：基於手勢控制的虛擬試穿軟體(Virtron)

傑出表現

1. 國際研討會論文發表1篇、國內研討會論文發表2篇
2. 參與產學合作計劃2項
3. 通過專利1件(申請中1件)

團隊介紹

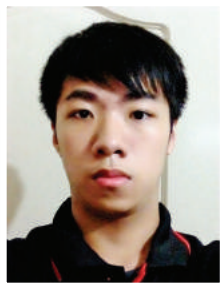
本團隊Virtron含義係指 Virtual Try-On Solution。潘劼克與劉宇望為清華大學產品開發實驗室瞿志行教授的學生，本次創意發想源頭也是來自於瞿志行教授的產品設計與開發課程。在一個學期中，我們從創意發想，用戶訪談，設計思考，產品規格設計以及程序開發，一路克服了很多障礙，也學習到了很多創新創業上的知識。並在和臺科大合辦的展覽中獲得多位業內專家的點評與稱讚。

創意概述

很多人平時在購買衣物鞋子的時候，經常會想要試穿，但是商店鞋品和衣物繁多，往往試穿三件就已經時間超過。因此我們利用手勢識別技術，3D高擬真建模技術構造出一個快速試穿鞋品和衣物的軟體Virtron，可以讓消費者在進入商店之前，就可以先通過虛擬試穿選擇自己比較喜歡的衣物，然後再進入商店挑選覺得滿意的衣物進行試穿，並可以實現大量的個人化設計概念，展現擴增實境在商品展示的潛力。目前Virtron已經和辰科有限公司展開了合作。

團隊得獎感言

在產品開發與設計課程中，瞿教授說，他這輩子上過最好的課程就是在UC Berkeley和不同學院的同學一起進行產品設計思考的課程。因為不同背景的人的思考方式各異，相互碰撞就可以激發出更大的火花。本團隊曾一起在雨夜出發調查不同地區潛在使用者與明確消費者的需求，也曾一起在實驗室中調試程序，同時也曾去合作的公司商談並取得數據資料。一路走來，獲得的知識實在是很多。在此感謝瞿志行教授對我們的精心輔導，以及辰科有限公司提供的幫助。



吳秉翰



葉光榮



廖浩翔



陳炳坤

吳秉翰 臺北城市科技大學 機械工程系 大四／葉光榮 臺北城市科技大學 機械工程系 大三
廖浩翔 臺北城市科技大學 機械工程系 大三／陳炳坤 臺北城市科技大學 機械工程系 大三
創意作品：汽機車兩用頂車架

傑出表現

1. 國內研討會論文發表2篇
2. 瑞士日內瓦國際發明展金牌獎(2017)、韓國首爾國際發明展金牌獎(2016)、臺北國際發明展銅牌獎(2016)
3. 參與專案計畫2項
4. 通過專利1件(申請中1件)

團隊介紹

團隊指導：黃俊賢老師

吳秉翰：本團隊的隊長；對於運籌帷幄組織團隊具有獨特見解，總是能明察秋毫的指正我們的錯誤。

葉光榮：具備優異電腦製圖能力而完美呈現設計理念，對於溝通技巧具有獨特的功力，故能有效凝聚團隊成員間之共識。

廖浩翔：對於頂車架之改裝具有深厚功力，在操作儀器、機器的方面更是得心應手，常常用心指導組員。

陳炳坤：對於加工技巧及機械元件控制應用具有專業，總是能採用最佳的實作方法，以達到最好的工作效率。

創意概述

本創作之頂車框係以習知機車頂車架進行設計變更，而將一千斤頂安裝於頂車框內，先透過馬達依車型調整頂車軸承的位置，再將本創作推入車體下方，持續下壓握把桿使頂車軸承轉動接觸該頂升位置而向上升高，直至該頂車框轉正固定後，而將車輪頂高離地。本創作已針對Focus汽車驗證頂車功能，主要特色包括：1.可適用於汽車及機車的頂車；2.可使汽車頂車的方式更簡易及省時；3.具備照明的功能；4.具備警示的功能；5.具備電動調整高度的功能。

團隊得獎感言

感謝中技社評審委員的肯定，讓我們能夠獲獎；感謝指導我們的黃俊賢老師與許多幫助過我們的臺北城市科大機械系的老師們，並感謝畢業學長們提供研究上的基礎與幫助，指導我們從錯誤中學習並成長。此作品是我們一項小小的成功，未來我們會更努力於創意研究，並對社會盡一份心力。





Anil Kumar Pulikkathodi(亞尼爾)

國家：India (印度)

學校：National Tsing Hua University

系所：Institute of NanoEngineering and Microsystems

年級：4th year of doctoral course

研究主題：Enumeration of Cancer Cells and Investigation of Cellular Bioelectric Signals Using Electrical Double Layer Gated FET Biosensor

傑出表現

1. 1 publication in domestic journal
2. 4 papers in international conferences and 1 paper in domestic conference
3. Involved in 2 research projects
4. 1 patent granted (pending)
5. Excellent Research Paper Award, Institute of NEMS Thesis Competition, NTHU, 2017 ; International Graduate Student Scholarship, NTHU, 2013-2016

自我介紹

I pursued my masters in Asia University, Taichung, and worked in Lite On Semiconductor Corp., Hsinchu Science Park. Currently I am a doctoral candidate in National Tsing Hua University, Hsinchu. My research interests include semiconductor devices, electronic nano/micro sensors and biomedical systems. Pursuing research at one of the top institutions in Taiwan has provided several golden opportunities for me to learn and grow as an engineer, a scientist and a responsible citizen of the world. I wish to give back to the scientific fraternity of Taiwan, by sharing my acquired skills, for the betterment of all humanity.

研究概述

My research focuses on the design, fabrication and characterization of electrical double layer (EDL) gated field-effect transistor (FET) biosensor array for whole cell sensing and investigation of bioelectric signals of cells. The goals of my research are twofold: detection and enumeration of rare cell types such as cancer cells (circulating tumor cells and cancer stem cells) and investigation of cellular bioelectric signals for ion channel study and transmembrane potential measurements. I hope to further develop the EDL FET biosensor platform to demonstrate novel applications such as drug response and development and detection of rare cells in whole blood.

得獎感言

I consider this a moment of great joy and an honor to be here amongst some of the brightest minds of Taiwan. I would like to express my sincere gratitude to the CTFCI Foundation for supporting young researchers like me, to explore and go beyond the limits and achieve scientific excellence. Awards like these are stories of inspiration for the budding scientists out there. I would like to dedicate this award to my PhD Advisor Professor Yu-Lin Wang and our wonderful team of zealous researchers who have helped me earn this recognition. Thank you very much.



Aswin Lim(林孝悅)

國家：Indonesia (印尼)

學校：National Taiwan University of Science and Technology

系所：Department of Civil and Construction Engineering

年級：4th year of doctoral course

研究主題：Advanced Buttress and Cross Walls Application for Deep Excavation in Soft Clay

傑出表現

1. 4 publications in international journals and 1 publication in domestic journal
2. 9 publications in international seminars/conferences and 5 publications in domestic conferences
3. Involved in 6 research projects
4. 1 patent under review (pending)
5. Best paper award in 3rd European and Asian Civil Engineering Forum (EACEF), The International Full Scholarship for Master Degree by National Taiwan University of Science and Technology, The International Full Scholarship for Doctoral Degree by National Taiwan University of Science and Technology

自我介紹

My name is Aswin Lim, and I was born in Pontianak city, a capital city of West Borneo province, Indonesia. Currently, I am a Ph.D. student of Civil and Construction Engineering in National Taiwan University of Science and Technology (NTUST) that I have started my research from the first semester, in parallel with taking some coursework, and I passed the Ph.D. qualifying exam in the second semester. I am very focus and positive on my research that leads me to several academic achievements. In the future, I hope that my doctoral degree could elevate my career as an academician and researcher.

研究概述

My main research topic is investigating the advancement of the buttress and cross walls application for deep excavations in soft clay. It consists of three parts, which are (1) Discovering the most effective shape of buttress wall to limit movements induced by deep excavation, (2) Investigating the performance and mechanism of the rigid support system, and (3) Exploring the further application of cross walls and buttress walls usage as a strut-free retaining wall system. The research is mainly conducted with three-dimensional finite element analyses and several excellent case-histories for verifications. The analysis results are very promising to be implemented in industry.

得獎感言

I am greatly humbled and honored to receive this prestigious CTCI Foundation Science and Technology Scholarship. I would like to offer my sincerest gratitude to the CTCI Foundation for this honor. I did not make the journey here alone. First, I would like to thank my advisor, Professor Ou Chang-Yu, for “spreading my wings and teaching me to fly”. I am also blessed with an amazing and supportive family, Tiffany, my beloved wife, Cetta and Timothy, my daughter and son, and my parents and brothers. Many thanks also to NTUST for amazing supports during my Ph.D. study. Thank you all.



Bivas Panigrahi(白登成)

國家：India (印度)

學校：National Cheng Kung University

系所：Department of Mechanical Engineering

年級：3rd year of doctoral course (5th semester)

研究主題：Biological Perspectives of Artificial Cilia Based
Microfluidics

傑出表現

1. 6 publications in international journals
2. 5 papers in international conferences and 2 papers in domestic conferences
3. Involved in 3 research projects
4. NCKU Distinguished International Student Scholarship 2015~2017

自我介紹

I am Bivas Panigrahi from Odisha, which is one of the 29 states, located at eastern part of India. Currently, I am pursuing my Ph.D. in the Department of Mechanical Engineering at National Cheng Kung University (NCKU). I have completed the required coursework and the qualifying examinations. I am a highly motivated researcher, who always pursuit of academic excellence. I do appreciate the quality of academic environment provided by NCKU and Taiwan education system. My goal is to get a job in Taiwan after my graduation.

研究概述

Microfluidic devices are the recent technological advancement in the research and garner a substantial attention among the research society as well as the industries due to its subtle advantages over the conventional laboratory techniques. My research focus to explore the beating behavior of natural cilia and mimic its behavior within the microfluidic environment to manipulate the fluid flow. Moreover, I observe the biological perspectives of these devices. For an instance, artificial cilia based micromixing platform was designed to activate the cryopreserved zebrafish sperms by precisely controlling the hydrodynamic factors that influence the sperm morphology.

得獎感言

I am particularly very appreciative towards CTCI Foundation for selecting me as a recipient of this prestigious scholarship. Knowing that I have been awarded this highly competitive scholarship, makes me feel proud, and at the same time, obliged. This is the moment that I will always remember. Thank you, once again, for your generosity by recognizing my commitments and contributions towards scientific community.



Hien Thi Doan(董琦涵)

國家：Vietnam (越南)

學校：National Central University

系所：Department of Physics

年級：6th year of doctoral course

研究主題： Search for High Mass Resonances with Z
Decaying to Leptons Using Proton-proton
Collisions Data at $\sqrt{s} = 13$ TeV Recorded by
CMS Detector at LHC

傑出表現

1. 2 publications in international journals
2. Involved in 1 research project
3. Fiber Optics Scholarship for Research Excellent Students in Physics Department of National Central University 2016

自我介紹

My name is Hien Thi Doan from Vietnam. I am a PhD student in high energy physics at National Central University. Physics is my interest because it uses mathematics as tools to explain the nature. Studying in Taiwan is a good chance for me to follow my passion by doing the analysis for my thesis, which I hope to finish next summer. My plan after graduation is to continue doing more researches in high energy physics which covers interesting and fascinating and many unknown things to be discovered and understood.

研究概述

The European Organization for Nuclear Research, known as CERN, is a European research organization that operates the largest particle physics laboratory, where I was working for experiment of the Large Hadron Collider (LHC) accelerator and where the Higgs boson was discovered in 2012. After the discovery, many models predict Higgs has partners or siblings whose masses are heavier. So my main topic is to search for new particles using data from proton-proton collisions at the LHC in 2016 and 2017. Besides this, I also did the measurements with smashed proton-lead and lead-lead (so-called heavy-ion collisions) data to learn more quark-gluon plasma, the state of fundamental particles in very early stage after the Big Bang.

得獎感言

I am so delighted that I have been awarded the CTCI Foundation Science and Technology Scholarship. The award is meaningful to foreign students in Taiwan. I feel honored and I almost could not believe it when I got the notice saying that I was selected. I have no word to express my feelings. It makes my time in Taiwan more memorable and my future brighter. With all of this, I deeply thank you and wish you all the best.



Erry Dwi Kurniawan(艾里)

國家：Indonesia (印尼)

學校：National Tsing Hua University

系所：Department of Engineering and System Science

年級：4th year of doctoral course

研究主題：Study of High Mobility and Quantum Well
Semiconductor Nanoelectronics Devices

傑出表現

1. 4 publications in domestic journals
2. 8 papers in international conferences and 1 paper in domestic conference
3. Involved in 5 research projects
4. 1 patent granted
5. Taiwan International Graduate Program (TIGP) Scholarship 2014~2017, National Science Council (NSC) Grant, Taiwan NSC-103-2922-I-468-001 for attending China Semiconductor Technology International Conference (CSTIC) 2014

自我介紹

I am Erry Dwi Kurniawan from Indonesia. I am a PhD student of National Tsing Hua University (NTHU). I earned my bachelor degree in Electrical Engineering, Gadjah Mada University (Indonesia) and master degree in Semiconductor Technology Program, Asia University (Taiwan). In 2014, I continued to study doctoral degree in NTHU with particular interests in advanced nanoelectronics device design, fabrication, and simulation, such as nano-scale transistors, memory, etc. After acquiring PhD, dedicate myself as researcher in semiconductor technology. Returning to home country will be my plan to support my country in electronics development for developing welfare and civilization of Indonesian society.

研究概述

The semiconductor industry has availed massively from the Metal-Oxide-Semiconductor Field-Effect Transistor (MOSFET) miniaturization. As the transistor scaling down to 10nm technology, the silicon-based FET had reached the fundamental physics limits. For increasing the device performance, high mobility channel materials have recently developed. In this research, we study the high mobility materials, such as germanium and InGaAs quantum well Fin Field-Effect Transistor (FinFET) devices for low power logic devices application. New innovative device structure such as Tunnel Field-Effect Transistor (TFET) and stacked nano-sheet FET was also studied as the potential candidate in the next generation ultra-low power transistor to substitute the conventional FETs.

得獎感言

It is great honor to receive this prestigious scholarship from CTCI Foundation. I am earnestly grateful for the recognition I have received for my work. This scholarship increases my responsibilities to keep studies and motivates me to succeed in my field of study. The entire credit goes to my teachers and professors. Their academic supports helped me achieve this award. Also, our gratitude for my family that always inspires me to do the best. Once again, I would like to thank CTCI Foundation for their generosity and the financial support for this scholarship.



Jagabandhu Patra(潘卓督)

國家：India (印度)

學校：National Central University

系所：Institute of Materials Science and Engineering

年級：5th year of doctoral course

研究主題：Development of High-performance Anodes for Sodium-ion Battery through Optimization of Carbon Support, Electrolytes, and Binders

傑出表現

1. 7 publications in international journals
2. 6 publications in international conferences and 3 in domestic conferences
3. Involved in 3 projects
4. First prize in Student Poster Session in Materials Science, NSRRC 2017, Awarded “Gold Medallist Honour in Chemistry” for being topper in M.Sc. Chemistry 2013, Awarded “Smt. Parbati Mishra Memorial Award” for being first class first in M.Sc. Chemistry 2013

自我介紹

I am from India and currently a Ph.D. student into the final year of the program at the Institute of Materials Science and Engineering at National Central University. I am working under the supervision of Professor Jeng-Kuei Chang in Energy Storage and Green Chemistry Lab. Opting for the research profession, I felt it would give me a platform where I could dedicate my intellect in solving the practical problems which our universe is facing these days. I wish to serve our society by devoting my lifelong exploration in the development of renewable and sustainable energy sources which remains a burning dilemma.

研究概述

Advanced and efficient energy storage system is one of the inevitable components of modern life. Rechargeable batteries have achieved great triumphs in this landscape, as they can be utilized conveniently at low cost. Among rechargeable batteries, sodium-ion batteries (NIBs) recently have attracted attention to a great extent owing to easy accessibility of Sodium and its similar electrochemistry to the well-established lithium-ion batteries (LIBs). Although a large number of promising cathodes have been proposed for NIBs, coming up with a suitable anode is a major challenge. My research focuses on the development of high-performance anode materials for NIBs through optimization of various carbon support, electrolytes, synthesis methodologies, and binders.

得獎感言

I am extremely privileged to receive such a prestigious award. I am earnestly thankful for the recognition I have received for the research work. I want to express my sincere gratitude and special thanks to the CTCI Foundation Science and Technology Scholarship selection committee for nominating me. Against such a tough competition, I indeed count myself lucky to receive this scholarship. This award means a lot to me. Winning this reward would not have been possible without the inspiration and inestimable guidance I have received from my Ph.D. supervisor Professor Jeng-Kuei Chang and my seniors, from them I learned to challenge myself and achieve better at each stage.



Jindrayani Nyoo Putro(楊麗雲)

國家：Indonesia (印尼)

學校：National Taiwan University of Science and Technology

系所：Department of Chemical Engineering

年級：2nd year of master's course

研究主題：Polysaccharide as Nanocarrier for Hydrophobic Drug Delivery in Vitro Study

傑出表現

1. 9 publications in international journals
2. Involved in 2 research projects
3. National Taiwan University of Science and Technology International Graduate Students Scholarship for the academic years 2015/2016 and 2016/2017
4. Lee-Chia-Ping's Filial Piety Scholarship Award 2017

自我介紹

My name is Jindrayani Nyoo Putro, a Master student at National Taiwan University of Science and Technology. I got my bachelor's degree from Indonesia and was nominated as one of top 15 outstanding national students by Ministry of Research, Technology and Higher Education of the Republic of Indonesia. I am not the smartest student among my classmates, but I am able to work hard in continuous manner. My research interest currently focuses on the polysaccharide nanoparticle for environmental and material science. Until this year, my collaborators and I have published 9 papers in peer-reviewed and high impact SCI journals.

研究概述

Polysaccharides are included as a class of biomaterials with significant research interest for a variety of drug delivery and tissue engineering applications because of their biocompatibility and bioactivity. Numerous studies to improve the feature of polysaccharide have been investigated; one of the ways is chemically modifying polysaccharide into nanoparticles. The nanocarrier system is preferable in drug delivery because it can improve the solubility of hydrophobic compounds in solution, increase the stability of a wide variety of therapeutic agents and the absorbance of loaded drug toward target organs, and reduce the volume of distribution and drug toxicity.

得獎感言

I would like to thank the committee for selecting me for the CTCI Foundation Science and Technology Scholarship; I am greatly honored and proud to receive this award against many qualified applicants in this competition. I also would like to thank my supervisor Professor Ju Yi Hsu and Professor Suryadi, for their guidance and supports during my study at National Taiwan University of Science and Technology. With this award, it can always remind me about the perseverance and motivation throughout hardship. Once again, I am delighted to accept this award, thank you all!



Le Manh Trung(黎孟忠)

國家：Vietnam (越南)

學校：National Taipei University of Technology

系所：Graduate Institute of Mechanical and Electrical Engineering

年級：6th year of doctoral course

研究主題：Reconstruction of Accurate 3-D Surfaces with Sharp Edges Using Structured Light Projection and Multi-dimensional Image Fusion

傑出表現

1. 6 publications in international journals
2. 8 publications in international conferences
3. Involved in 5 research projects
4. Automated Optical Inspection Technology Competition 2014, 第11屆計量科技研發創意獎(2015), Second prize in “6th Intelligent Automation Equipment Invention Awards” 2016

自我介紹

I received my Bachelor Degree of Mechatronic Engineering from Hanoi University of Science and Technology (HUST) in Vietnam in 2008; Master degree from Minghsin University of Science and Technology (MUST) in 2011 and Ph.D. study at National Taipei University of Technology (NTUT) in Taiwan. My research interests are machine vision, intelligent robot vision, and robotics. I've published 6 journal papers and 8 conference papers, including a wide variety of research projects applicable to industry in Taiwan. My objective for the future is to become an expert in 3-D vision and precision metrology to conduct research that makes a significant contribution to the technology community and produce high-quality products for industry.

研究概述

The research presents a novel method employing structured illumination imaging and image fusion to overcome one of the greatest difficulties in 3-D optical measurement: accurate surface sharp edges reconstruction. The method is vital to in-situ automated 3-D optical inspection for precise critical dimension measurement involved with detection and reconstruction on surface edges. This research follows a developing trend in machine vision, and supports progress in the R&D of accurate methods for 3-D surface edge reconstruction which contribute to the development of 3-D optical vision systems and 3-D data processing algorithms with high theoretical value and practical value for industrial automation.

得獎感言

I am so honored to be standing here today to receive this CTCI Foundation Science and Technology Scholarship. I express my gratitude to CTCI Foundation for running such an excellent and competitive scholarship for foreign student studying in this beautiful country. I am grateful to my advisors, Professor Liang-Chia Chen and Professor Chih-Jer Lin from the bottom of my heart for their guidance and great academic supports during the past few years. Finally, I would like to express my deepest thanks to my parents. Without their love, inspiration and sacrifice, I would never have achieved this award. This award is dedicated to them.



Le Thi-Cuc(黎氏菊)

國家：Vietnam (越南)

學校：National Chiao Tung University

系所：Institute of Environmental Engineering

年級：4th year of doctoral course

研究主題：The Improvement of the Accuracy of the PM2.5 Sampling System

傑出表現

1. 4 publications in international journals
2. 5 publications in international conferences and 7 publications in domestic conferences
3. Involved in 2 research projects
4. 1 patent applied (pending)
5. No. 1 in Thesis Student Competition, ICAST awarded by Taiwan Association for Aerosol Research 2017 ; Certificate of excellence in learning, Fall and Spring, awarded by NCTU 2012 ; Certificate of the excellent Vietnamese researcher in Taiwan 2016 ; Top 5 in Environmental Science, awarded by Vietnamese student association in Taiwan

自我介紹

I am Le Thi-Cuc, a Vietnamese, and a 4th year Ph.D. student at National Chiao Tung University (NCTU). Before coming to Taiwan to pursue M.S. degree in 2011, I received the B.S. degree in Nong Lam University, Vietnam and worked as an environmental engineering designer or a material manager for 3 years. My current research interests are air quality sampling and instrumentation, air pollution control and air quality. Now, I am also a lecturer at Faculty of Science Engineering, Hoa Sen University, Vietnam. I plan to complete the Ph.D. program and return to Vietnam for teaching.

研究概述

PM2.5 (Particulate matter $\leq 2.5 \mu\text{m}$ in diameter) can easily penetrate into human body and severely affect human health (respiratory or skin diseases, eye irritation, etc.). The accuracy of sampling systems used for measuring PM2.5 concentration is important for compliance with PM2.5 standard. Size-selective inlets (inertial impactors or cyclones) are widely used to classify the desired particle sizes in sampling systems but they have some drawbacks (particle bounce, overloading or particle loss) that can deteriorate the measured PM2.5. Development of a good size-selective inlet that can overcome the problems to provide good accuracy is needed for establishing the reliable sampling systems.

得獎感言

When receiving email notification from my university about CTCI Foundation Science and Technology Scholarship, I didn't know what CTCI Foundation is. But after asking some lab-mates, I understand that CTCI Foundation have been established for 58 years, providing this scholarship for 55 years and helping hundreds or thousands of students to pursue their education dreams. Then, I feel truly honor and speechless when I am one of them now, here and holding this award. Thank you very much for what CTCI Foundation did, do and will do to support us. I will keep this inspiration in my heart and develop it when I have the chance.



Kaifan Lin(林凱帆)

國家：China (中國)

學校：National Taiwan University

系所：Department of Materials Science and Engineering

年級：2nd year of doctoral course

研究主題：Microstructure Evolution of Cantor Alloy Treated by Heat Treatment

傑出表現

1. 4 publications in international journals
2. Involved in 1 research project

自我介紹

I am Kaifan Lin, English name is Kaven, coming from Wenzhou, a cozy city located in the south of Zhejiang Province, China. I have gained my M.S. degree in Taiwan and continued with the Ph.D. program at National Taiwan University. Frequently being asked why I choose to study in Taiwan. It is because of the convenience in Taipei, approaching to a mountain for hiking or to sea for surfing in half an hour's drive, releases stress a lot after high-pressure experimental research. Also, due to the night-market culture here, the delicious food could heal my fatigued body and exhausted spirit. The most important is the novel research equipment and experienced professors in Taiwan that drive me to stay here for future study.

研究概述

The concept that allows the multi component metals with nearly equal atomic contents has been raised for decades, but the reality of such alloys should contribute to Yeh and Brian Cantor in 2004. Here, multi-component concentrated solid alloys that gain the equal composition of each element are named as High Entropy Alloys (HEAs). In this work, Cantor Alloy with an equal atomic ratio of NiCoCrFeMn was investigated to develop the fabrication process for industrial application.

得獎感言

Ladies and gentlemen, I am so surprised to realize I gain the CTCI Foundation Science and Technology Scholarship at this moment, and I thank God for my very good luck. Thank you all. It's a great honor for all of the awardees sitting here for your excellent achievements in related fields, and all of you are winners. Also, thanks to the great work done by the scholarship committee, picking up the nominated ones from the top students, I believe, is the hardest work in the world. I still cannot believe I won the scholarship, and I cannot win it without the support from my friends and teachers. Finally, the prizes are materials, but the memory will last forever.



Naresh Kuthala(那力士)

國家：India (印度)

學校：National Tsing Hua University

系所：Department of Chemistry

年級：6th year of doctoral course

研究主題： Nanomaterials Mediated Boron Neutron Capture
Therapy for the Destruction of Tumors

傑出表現

1. 1 publication in international journal and 1 publication under review in international journal
2. Involved in 3 research projects
3. National Tsing Hua University International Graduate Students Scholarship for the year 2012/2013 and 2014/2015

自我介紹

I am Naresh Kuthala, a Ph.D. student in Chemistry department at National Tsing Hua University. I am from India, and have completed five years of doctoral program under Professor Kuo Chu Hwang. I have a good academic and research results for meeting all the criteria for doctoral degree program. The basic research at undergraduate level built a strong passion to continue advanced level research in Taiwan. The world class research equipment and friendly atmosphere in Taiwan impressed me very much. My aim is to become a good research scientist in my field to provide nanomedicine for the cancer.

研究概述

We demonstrate for the first time that an unprecedented 10B-enriched (96% 10B enrichment) boron nanomedicine (10BSGRF NPs) surface-modified with a FITC-labeled RGD-K peptide can pass through the BBB, selectively target at GBM-brain tumor sites, and deliver high therapeutic dosage (50.5 μ g 10B/g cells) of boron atoms to tumor cells with good BBB-ratio of 2.8. The 10BSGRF NPs suppress murine brain tumors via magnetic resonance (MR) imaging-guided BNCT, prolonging the half-life of mice from 22 days (untreated group) to 39 days. This work sheds light on new way to treat patients with complicated and 'difficult-to-treat' brain tumors via MR imaging-guided BNCT.

得獎感言

I am extremely humbled and honored to be receiving CTCI Foundation Science and Technology Scholarship, particularly given me with an extraordinary strength to continue my research. I would like to offer my sincerest gratitude for the recognition I have received for my research and academic achievements. I would like to thank my professor Dr. Kuo Chu Hwang who has been my Ph.D. mentor. His passion towards research motivated me to think big and achieve big. I sincerely thank everyone for helping me reach a stage where I can proudly hold up this award as a mark of my achievements.



Nguyen Thi Hoai Thu(阮氏懷秋)

國家：Vietnam (越南)

學校：National Central University

系所：Department of Mechanical Engineering

年級：4th year of doctoral course

研究主題：Silicon Crystal Growth

傑出表現

1. 4 publications in international journals
2. Involved in 2 research projects

自我介紹

My name is Nguyen Thi Hoai Thu from Vietnam. In 2012, I came to Taiwan for studying Master program with the major in Mechanical Engineering. After getting Master degree, in 2014, I decided to continue studying Doctoral program. My research topic is about silicon crystal growth in photovoltaic industry. So far I have published four SCI papers and cooperated with the leading companies in silicon wafer production in Taiwan (SAS, Global Wafers). I am a person that has responsibility and passion in doing research. "Smile and keep moving" is my saying for life.

研究概述

Photovoltaics (PV) are the electronic devices that convert solar radiation directly into electricity. Crystalline silicon is the material most commonly used in the PV industry, and wafer-based c-Si PV cells and modules dominate the current market. To accomplish the goal of grid parity, the production cost of silicon solar cells must be reduced further and their efficiency has to be improved which is strongly dependent on wafer production and quality. Therefore, the crystal growth technology plays a role key. My research is focused on controlling the flow and thermal fields during the growth process of silicon crystal to improve the crystal quality.

得獎感言

I am extremely honored to be one of recipients of the CTCI Foundation Science and Technology Scholarship. Against such strong competition, I really do have to count myself lucky to win - but win I did. For an international student, living and studying in Taiwan is not easy. Your scholarship will help me to study in Taiwan and encourage me to put more effort in research. I would like to thank all of you sincerely for helping me reach a stage where I can proudly hold up this award. I will study hard to achieve my goals.



Nguyen Van Thuong(阮文商)

國家：Vietnam (越南)

學校：National Cheng Kung University

系所：Department of Aeronautics and Astronautics

年級：2nd year of doctoral course

研究主題：Holes, Cracks, or Inclusions in Two-dimensional
Linear Anisotropic Viscoelastic Solids

傑出表現

1. 2 publications in international journals
2. 5 publications in international conferences
3. Involved in 3 research projects
4. Phi Tau Phi Scholastic Honor Society, the Second Prize in Large Dragon Boat Race-International Friends Team of the Tainan City Dragon Boat Race Championship 2017, Scholarship of group Mitsubishi Heavy Industry (MHI) for excellent students 2013, Encouragement Prize in National Mechanical Olympics 2012

自我介紹

My name is Nguyen Van Thuong (阮文商) from Vietnam. I have finished the first year of my PhD program under the instructions of Professor Chyanbin Hwu, at National Cheng Kung University (NCKU), Department of Aeronautics and Astronautics, with the major in Structures and Materials. My research topic is about the analytical and numerical analysis for anisotropic viscoelastic solids. Based on devotion and passion for my research topics, I have published two international papers and five international conference papers. Now, I have studied the mixed-boundary value viscoelastic problem such as the indentation on anisotropic viscoelastic solids.

研究概述

Polymer matrix composites exhibit not only anisotropic (directional-dependent) but also viscoelastic (time-dependent) behaviors. Although there are many different kinds of commercial software working on the stress analysis of composite materials, most of them only provide the functions for isotropic elastic, anisotropic elastic, or isotropic viscoelastic materials, almost none of them consider the analysis of anisotropic viscoelastic solids. Additional works are required for some of them. By combining the elastic-viscoelastic correspondence principle with the analytical solutions of anisotropic elasticity, the problems of two-dimensional linear anisotropic viscoelastic solids can be solved directly in the Laplace domain. After getting the solutions in the Laplace domain, their associated solutions in real time domain can be determined by numerical inversion of Laplace transform.

得獎感言

First of all, I would just like to say it is a huge honor to be awarded the CTCI Foundation Science and Technology Scholarship. I am very delighted because it was one of my goals to stand here in front of many people accepting an award recognizing my achievements. Here, I would like to take this chance to express my deep gratitude to the CTCI Foundation for granting me the honor. And also thanks to my advisor, Professor Chyanbin Hwu from NCKU, who is doing his best to train and teach me. Thank you!



Pavithra Sriram

國籍：India (印度)

學校：National Tsing Hua University

系所：Department of Materials Science and Engineering

年級：4th year of doctoral course

研究主題：Light Matter Interaction of TMDC with Plasmonic Nanostructures for Efficient Optoelectronic Devices

傑出表現

1. 3 publications in international journals with total IF 16.878
2. Involved in 3 research projects
3. Conference paper-“Enhancing light matter interaction in monolayer MoS₂ with patterned plasmonic nanostructures using two different configurations” META17, the 8th International Conference on Metamaterials, Photonic Crystals and Plasmonics

自我介紹

I am Pavithra Sriram from Nilgiris, India, where I lived for most of my life. I grow up in a warm and supportive family and in a city which provides me with a sound education and opportunities for personal growth. My father, Mr. Sriram and my mother Mrs. Jayanthi run business. I have one younger sister Ms. Sujithra Sriram doing her Masters in Economics. Through my education in Sri Shanthi Vijay Girls High school, I learned about discipline and because the teachers were all supportive and motivated me, I have decided to pursue higher studies in Physics. With good grades and achievements during my undergraduate and graduate studies, I had a strong interest in research which leads me to study PhD. I am grateful for pursuing my doctorate under the guidance of Professor Ta-Jen Yen, who is a motivational and supporting teacher.

研究概述

Despite tremendous progress achieved in the field of plasmonic nanoantennas, recently significant efforts has been contributed for studying the light-matter interaction of plasmonic nanoantennas with few layer transition metal dichalcogenides (TMDs). Monolayer molybdenum disulfide (MoS₂) has intense attention in recent years for their unique optical properties. However monolayer MoS₂ suffers from insufficient light matter interaction because of its atomically thin nature. Plasmonic nanostructures can be easily integrated and boost the light matter interaction of 2D TMDCs. In this study, we demonstrated the enhanced Photoluminescence and photocatalytic properties of bilayer MoS₂ toward Hydrogen Evolution Reaction (HER) using quadrupole gap surface plasmonic structures. Near field enhancement of quadrupole gap surface plasmonic structures has been optimized by Taguchi design methods.

得獎感言

I am humbled, honored, and grateful to have been selected as a recipient of the CTCI Foundation Science and Technology Scholarship. I am earnestly thankful for the recognition I have received for my work. It's a great feeling to receive this award which will support me for the rest of the years in research, and this experience is something that I will never forget. I would like to take this opportunity to thank my parents, teachers, family,

friends and CTCI Foundation for their support, generosity, and guidance. I am proud of my heritage and excited about my future. This award motivates me to live my passion, and I am delighted to receive this award. Once again, I thank you all from the bottom of my heart.





Pedaballi Sireesha

國籍：India (印度)

學校：National Taipei University of Technology

系所：Institute of Chemical Engineering Molecular Science &
Organic Polymeric Materials

年級：4th year of doctoral course

研究主題：Modified Photoanodes and Newly Synthesized
Organic Dyes for DSSC Applications

傑出表現

1. 9 publications in international journals
2. Involved in 2 research projects under advisor supervision
3. National Taipei University of Technology International Graduate Students Scholarship for 2017-2018

自我介紹

My name is Pedaballi Sireesha from India. I got enrolled for doctoral program at National Taipei University of Technology in September 2014. This is my 4th year as doctoral candidate under the guidance of Professor Chaochin Su. Currently, I have passed all the required qualifying exams and course works and approaching for graduation. In these three years, I have published a good number of journals. I came to Taiwan with great aspiration to become a good researcher in my chosen field. I am trying my best to reach my goals and testing my limits to get the glory of success to my career.

研究概述

The development of cost-effective renewable energy sources such as solar energy is one of the best alternatives. Dye-sensitized solar cells (DSSCs) are the most prominent candidates for the easy fabrication, cost-effective and the conversion of solar energy into efficient electricity. DSSCs harvest solar energy and convert it into electricity through a suitable dye sensitized semiconductor photoanode material. The aim of my study is to develop modified TiO₂ photoanodes and the cost effective novel organic sensitizers with better dye loading, fast electron transport and good light harvesting capacity. These facilitate the further enhancement in the photovoltaic performance of DSSCs.

得獎感言

I am immensely blissful for being selected for the CTCI Foundation Science and Technology Scholarship. I will treasure this prosperous moment for my whole life. I am accepting this prestigious opportunity as a big motivation for graceful career ahead. I am sincerely thankful to my dear parents and my advisor for their constant supports all the way. This delightful success is the result of past struggles, which genuinely made me strong to reach where I am today, with my ability, faith, and hard work.



Raj Karthik

國家：India (印度)

學校：National Taipei University of Technology

系所：Department of Chemical Engineering and Biotechnology

年級：3rd year of doctoral course

研究主題：Synthesis and Characterizations of Metal Molybdates/
carbon Composites for the Electrochemical Sensors
and Photocatalytic Applications

傑出表現

1. 38 publications in international journals
2. Involved in 2 research projects
3. “Young Researcher Award” from Taiwan Tamil Sangam (TTS) for my research accomplishments in Taiwan 2017

自我介紹

I am Raj Karthik and I received my B.Sc and M.Sc degree in subject of Chemistry from Madurai Kamarajar University, Tamilnadu, India, in the year of 2012 and 2014. Currently, I am doing Ph.D. under supervision of Professor Shen-Ming Chen from Dept. of Chemical Engineering and Biotechnology at National Taipei University of Technology. My current research interests include electroanalytical chemistry, bioelectrochemistry, and nanomaterial synthesis for electrochemical and photocatalytic applications. I have published 38 research articles in SCI journals. Furthermore, I am involved in the design and synthesis of carbon nanomaterials, metal chalcogenides and metal nanoparticles for the fabrication of sensor devices.

研究概述

Transition-metal molybdates have concerned enormous curiosity as supercapacitors, photocatalysts, and electrocatalysts. These materials are the best alternatives to noble-metal-based catalysts, which generally show a limited photocatalytic and electrocatalytic activity. The drugs/pesticides can usually pollute the environment through improper disposable, incomplete metabolism (drug) and over usage in the agricultural areas (pesticides); it is very dangerous to humans as well as aquatic animals. Therefore, we have studied the electrochemical determination and photodegradation of drugs/pesticides by metal molybdate, which is used as both an electro- and a photocatalyst. The as-prepared metal molybdates catalyst delivered a highly efficient activity toward the detection and degradation of drugs/pesticides.

得獎感言

I am deeply honored to have been selected for the prestigious CTCI Foundation Science and Technology Scholarship. I am sincerely grateful for the recognition from the CTCI Foundation. I would like to thank my Ph.D. supervisor Professor Shen-Ming Chen, Dr. Karupiah Chelladurai, Mr. J. Vinoth kumar, Mr. N. Karikalan and my colleagues, lab-mates for continuous supports to achieve this honorable award. This award gives me motivation towards my effective research life in NTUT, Taiwan. I assure that my future achievements will be gratefully acknowledging my university as well Taiwan government. Once again I am very pleased to receive this award, thank you all.



Ruki Harwahyu

國家：Indonesia (印尼)

學校：National Taiwan University of Science and Technology

系所：Department of Electronic and Computer Engineering

年級：4th year of doctoral course

研究主題：Improving and Optimizing Access Performance of Narrowband IoT Networks

傑出表現

1. 8 publications in international journals
2. 13 publications in international conferences
3. Involved in 3 research projects in Taiwan and 4 research projects in Indonesia
4. NTUST full scholarship from 2014-2018
5. Certified as IEEE Wireless Communication Professional (internationally acknowledged, valid until 2019)

自我介紹

My name is Ruki Harwahyu and I received B.E. degree in Computer Engineering from Universitas Indonesia (UI) in 2011, and M.E. degree from UI and National Taiwan University of Science and Technology (NTUST) in 2013 (dual degree). I was a CISCO Certified Networking Academy instructor and lecturer at UI in 2011 and 2013, respectively. I am currently a Ph.D. candidate in Electronic and Computer Engineering at NTUST. I am a certified IEEE Wireless Communication Professional. My research interests include computer and telecommunication networks and the Internet of Things.

研究概述

Narrowband Internet of Things (NB-IoT) is new cellular technology to efficiently support IoT services. It can support massive low-power nodes in a wider cell by employing multiple coverage enhancement (CE) levels. However, the random access (RA) in NB-IoT is prone to collision, and fairness among CE levels is hard to be obtained. In this work, we study the effect of 5 main parameters in the RA and introduce a novel analytical model. An optimization framework is then proposed to maximize RA throughput while maintaining fairness. Subsequently, a novel dynamic collision avoidance method is proposed to further improve the system.

得獎感言

I came from Indonesia three years ago for pursuing PhD degree. Even though it is been really nice living here in Taiwan; such a beautiful island with friendly people and convenient transportation, temperately leaving my 1 month old son and my beloved wife to pursue my knowledge and learning here was frankly not the happiest choice at that time. Receiving this award is really a big honor for me. Thank you for everyone who has nominated me and the CTCI Foundation.



Saikat Sinha Ray

國家：India (印度)

學校：National Taipei University of Technology

系所：Institute of Environmental Engineering and Management

年級：3rd year of doctoral course

研究主題：Development of Advanced Membranes for Sustainable Desalination

傑出表現

1. 13 publications in international journals and 5 in domestic journals
2. 8 publications in international conferences and 3 in domestic seminar papers
3. Involved in 2 research projects
4. Recipient of “Sunshine Scholarship” from National Taipei University of Technology, Taiwan, 2017

自我介紹

My name is Saikat Sinha Ray and is currently a 3rd year Ph.D. student studying under the guidance of Professor Shiao-Shing Chen at the Institute of Environmental Engineering and Management, National Taipei University of Technology, Taiwan. I am working on membrane technology for sustainable desalination. I have worked as a research assistant in many projects funded by the Ministry of Science and Technology, Taiwan and published twelve SCI journal articles. Moreover, one of my book chapters has been published in Environmental Chemistry for a Sustainable World - Springer in 2017. I have participated in four international conferences in China, South Korea and Singapore.

研究概述

In this era of nanotechnology, electrospun nanofibrous membranes offer versatile characteristics such as mechanical toughness and a large surface area, making them attractive for various applications. Electrospinning is an emerging methodology for producing nanofibers. Furthermore, electrospinning yields uniform pore size, which is considered a crucial characteristics of water treatment membranes. Consequently, electrospun membranes are increasingly employed in water treatment applications such as membrane distillation and pretreatment of feed prior to reverse osmosis or nanofiltration for the removal of divalent metal ions and other contaminants. Thus, novel technology and innovation are required to enable desalination, water reclamation, and wastewater treatment.

得獎感言

I am greatly humbled and honored to receive this prestigious award of CTCI Foundation Science and Technology Scholarship. I would like to offer my sincerest gratitude to my Advisor Professor Shiao-Shing Chen and my university for giving me this chance. I did not make this journey alone. Thank you to numerous people who have supported me along the way and the continuous supports from my lab mates, I would not be here without all of their supports and encouragements. Finally, I sincerely thank the CTCI Foundation for letting my dream comes true. Congratulations to all the recipients of this prestigious award. Cheers!



Selvaprakash Karuppuchamy(柯世凡)

國家：India (印度)

學校：National Chiao Tung University

系所：Department of Applied Chemistry

年級：6th year of doctoral course

研究主題：Synthesis and Applications of Photoluminescent Gold Nanoprobes for Targeting Biomolecules and Toxins

傑出表現

1. 3 publications in international journals
2. Involved in 2 research projects
3. Graduate Student's Paper Award from National Chiao Tung University for the year 2014 and 2017

自我介紹

I am Selvaprakash Karuppuchamy, doctoral student at National Chiao Tung University (NCTU). I have completed my undergraduate and master's courses in India. I came to Taiwan as a Ph.D. student, presently in my 11th semester of the Ph.D. graduate programme. My current research has produced the positive impact of results, which has been evidenced through the published scientific papers. I am really motivated by high quality academic and research environment in NCTU and good lifestyle in Taiwan. In future, I would like to continue my field of research and I believe that my research will help to address some of the important scientific problems.

研究概述

Some of the lectins produced from plants and bacteria are highly toxic to humans and animals. Thus, developing analytical methods that can be used to detect these toxin lectins are essential. Currently we are focusing the design and development of green and inexpensive synthetic route for generation of protein encapsulated gold nanoclusters (AuNCs@protein) from naturally available protein mixtures. Some important properties of AuNCs@protein are strong photoluminescence, good stability and biocompatibility. We use AuNCs@protein combined with some analytical techniques to target the lectins and biomolecules. We strongly believe that our approach will help to explore new cost effective and environmental friendly nanomaterials.

得獎感言

It's really a great honor to receive such a competitive award from CTCI Foundation. Personally, I feel very happy and proud of being one award winner of the CTCI Foundation Science and Technology Scholarship. This moment came at a perfect time. No doubt that this scholarship will help me a lot in terms of my current financial situation with Ph.D. studies. I am delighted to receive this award. Thank you very much for the CTCI Foundation and National Chiao Tung University.



Sridhar Chandrasekaran(施瑞達)

國家：India (印度)

學校：National Chiao Tung University

系所：EECS International Graduate Program

年級：4th year of doctoral course

研究主題：Resistive Switching in ZrO₂ Based CBRAM

傑出表現

1. 3 publications in international journals
2. 1 publication in international conference and 2 in domestic seminar papers
3. Involved in 2 research projects
4. Bronze award at TACT 2017

自我介紹

I am Sridhar Chandrasekaran, studying in the 4th year Ph.D. in Electrical Engineering and Computer Science (EECS) international graduate program at National Chiao Tung University, Hsinchu, Taiwan. My overwhelming passion of doing innovation research acts as a wing to drive to much larger height. I believe strongly that the more you learn about new things, the more solutions you can provide to the work environment. My current research of interest deals with fabrication and improvement of highly reliable Resistive Switching Random Access Memory (RRAM). My long-term goals related to improve my research into a stronger socio-economic environment which feeds the growing demands of our society.

研究概述

Metal diffusion barrier dependent switching polarity in ZrO₂-based conducting bridge random access memory is investigated. The device without the barrier layer (BL) exhibited nonpolar switching characteristics. However, inserting TiW BL resulted in the positive reset failure. This phenomenon depends on the size and shape of the conducting bridge, and also on the defects that contribute to the formation and rupture of the bridge. Consequently, the conducting bridge's properties govern the device switching performance. Cu and oxygen vacancy based conducting bridge are proposed during N-Set for with and without barrier layer device. The impact of the insertion of the BL to the switching performance is also discussed. It is found that the absence of barrier layer results in switching instability and poor non-volatility. Conversely, a device made with BL shows enhanced uniformity and greatly increased the non-volatility; retention of more than 105 s at 200°C.

得獎感言

I am truly and honestly thrilled to be here with this award. It is a great honor to receive this prestigious award from CTCI Foundation. This award is increasing my responsibility to furthermore extent and motivates me to do much better research which could satisfy the growing demands of our socio-economic ecosystem. Those humble souls devoted their time and efforts in crafting me into a perfect diamond. I take this moment to thank those humble souls who are behind me all the time. I am once again conveying my gratitude for this kind consideration and thank you all sincerely from the bottom of my heart.



Binyet Emmanuel Mbondo (仁飄零)

國家：Switzerland (瑞士)

學校：National Tsing Hua University

系所：Department of Power Mechanical Engineering

年級：5th year of doctoral course

研究主題：Flexible Plate in the Wake of a Square Cylinder for Energy Harvesting Purposes (撓性板在方柱的尾流)

傑出表現

1. 5 publications in international journals
2. 1 paper in international conference and 1 paper in domestic conference
3. Involved in the project plan 多軸研磨成形加工系統之系統及液靜壓軸承基礎技術研發
4. 1patent granted (waiting for the official document)

自我介紹

Graduated from the Geneva Engineering School in 2006, I started as a project engineer at a company designing water treatment plants. In September 2007, fascinated by Chinese culture, I obtained a scholarship for a Master's Degree program in Huazhong University of Science and Technology in Wuhan China. In 2011, I went back to Switzerland and worked first on a dam, then as a research assistant in a wind tunnel and finally as a consultant engineer conducting fire safety studies. In September 2013, I came to Taiwan with my son (born in 2009) whom I raise alone after my divorce in 2012.

2006年畢業於日內瓦工程學校機械工程專業。2007年前半年間，在一家水淨化公司當工程師，9月來到武漢的華中科技大學讀碩士班；2011年獲得動力機械碩士學位，研究題目為一種新型的風力機。2011年於瑞士Fribourg省山上的一個水力發電站當工程師，次年回到日內瓦工程學校當研究助理，主要研究為風洞實驗以及模擬計算。2013年2-8月在瑞士的Lausanne，一家工程諮詢公司(BG Consulting Engineers)上班，工作內容為模擬計算隧道內火災煙霧的排除；9月來到臺灣並研讀於清華大學動力機械系博士班。自2012年離婚後，獨自撫養兒子，他現在已經八歲，就讀於新竹建功國民小學三年級。

研究概述

The unequal pressure distribution due to turbulence on the device generates vibrations which can be converted to electricity through piezoelectric transduction mechanism. The energy harvester concept that is investigated consists in a polymeric thin flexible plate (that can host piezoelectric elements on each side) placed in the wake of a rigid bluff body. The motion of the plate is similar to that of a swimming eel and can be approximated using a cantilever beam model. Experiments were carried out in a water tunnel, and a high speed camera was used to simultaneously capture both the plate deflection and the flow pattern.

得獎感言

It is an immense honor and joy to receive the CTCI Foundation Science and Technology Scholarship. I would like to express all my gratitude to the CTCI Foundation for showing such care and compassion towards foreign students and thank the Power Mechanical Engineering Department of Tsing Hua University for providing me such an opportunity. Thanks to my advisors for their teachings. It is solely with such support that it is possible for us to keep doing long and difficult research work because only then we can overcome the financial stress. Thanks from the bottom of my heart!

非常高興暨非常榮幸能獲得「中技社科技獎學金」。感謝中技社對留學生的愛護與關懷，感謝清華大學動機系的老師們給了我申請助學金的難得機會，也感謝導師們的教誨與陪伴，亦非常感謝臺灣對外國人的熱情，我們才得以克服日常的經濟壓力，在科學研究這條漫漫長路上繼續努力。容我激動地說“感恩不盡”！



Kanchan Yadav(甘湘恩)

國家：India (印度)

學校：National Taiwan University

系所：Department of Chemistry

年級：5th year of doctoral course

研究主題： Targeted and Efficient Activation of
Channelrhodopsins Expressed in Living Cells via
Specifically-bound Upconversion Nanoparticles

傑出表現

1. 3 publications in international journals
2. 1 paper in international seminar
3. Involved in 2 research projects
4. 2nd Best Poster Award in “Annual Meeting of Academia Sinica Research on Nanoscience and Nanotechnology” jointly organized by TIGP-Nano Program, Taiwan, 2016

自我介紹

I am Kanchan Yadav, 5th year Ph.D. student in Dept. of Chemistry, NTU. I belong to Varanasi from state of Uttar Pradesh, India. Varanasi is considered as the most spiritual capital of India. I have keen interest in research. Apart from being an enthusiastic student of Science, I practice yoga and meditation. Further, I would like to share that my grandfather, who is 103 years old, is suffering from Alzheimer's disease. His sufferings motivated me to carry out my research on Alzheimer's disease. Hence I decided to pursue my PhD work on optogenetics using upconversion nanoparticle.

研究概述

Optogenetics is an innovative technology now widely adopted by researchers in different fields of the biological sciences. Our groups have demonstrated the target selectivity by specifically conjugating the upconversion nanoparticles (UCNPs) with Channel Rhodopsin. Our design reduces the distance between UCNP and light-sensitive protein to a molecular level, which not only minimizes the near infrared red energy required, but also provides a way to guide the specific binding for optogenetics applications.

得獎感言

I thank the CTCI Foundation for selecting me as one of the recipients for CTCI Foundation Science and Technology Scholarship. It is really my honor to receive this Scholarship. It fills my heart with mixed feelings of immense pleasure and gratitude. I am pleased because my hard work makes me to compete with the best students and finally I am selected. A deep gratitude goes to my professors for their guidance and my department of NTU for nominating me as the candidate for this grant. Big thanks to everyone. It's a big day for me!



Vijay Kumar Malkundi Puttaveerappa(莫杰楷)

國家：India (印度)

學校：National Chiao Tung University

系所：Department of Electrophysics

年級：1st year of doctoral course

研究主題：Performance Optimization of Nano-scaled CMOS Devices

傑出表現

1. 2 publications in international journals and 2 publications in international journals under review
2. 5 papers in international seminars
3. Involved in 5 research projects
4. 2 patents granted
5. NCTU Award of Outstanding Students from 09/2013 - 02/2017

自我介紹

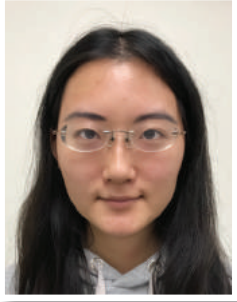
I am Vijay Kumar from India and currently pursuing the Ph.D. degree at the Department of Electrophysics, National Chiao Tung University (NCTU), Hsinchu, Taiwan. My research interests include Semiconductor Physics, Design and Modeling of Nanoscale and Quantum Scale Transistors and Fabrication of Thin-Film Transistors. I have completed PhD qualifying exam in 2015 and is looking forward to graduate in July, 2018. I have published 2 journals and 5 international conference papers, as well granted 2 patents. And yet, there are one letter and one journal under review.

研究概述

Reducing the physical dimensions of MOSFETs enables extraordinary improvements in the switching speed, device density, and functionality, however, inevitably leads to the short-channel effects (SCEs) and increases the subthreshold leakage current and power dissipation. Shell Doping Profile (SDP) is implemented to obtain the shallow junction depth which reduces the SCEs. The proposed method provides lower off-state current and a better gate control which reduce power consumption. In addition, the electrical performance of SDP QWFET is shown to be superior to those of Si and SiGe based SDP FETs.

得獎感言

First of all, I would like to thank the CTCI Foundation for providing Scholarship and Living Grants for international students and also congratulate to all grant recipients. I would like to thank my supervisors, family and friends for helping and supporting me in this journey. It's an honor to be the recipient of such grant. This grant indicates that I'm in a right direction, and I believe in competing with oneself and improving every day. I will keep improving to be successful, happy and do what is needed to help the society.



Cheng, Yue(成玥)

國家：China (中國)

學校：National Tsing Hua University

系所：Institute of Photonics Technologies

年級：3rd year of master's course

研究主題： Evanescent Modes Extraction Based on Rigorous Coupled Wave Analysis for Dipole on a Nanorod Hyperbolic Slab

傑出表現

1. 2 publications in international journals and 1 publication in domestic journal
2. Involved in 1 research project

自我介紹

I am Cheng Yue, a graduate student from Institute of Photonics Technologies, National Tsing Hua University with a bachelor degree in Information Engineering from Zhejiang University, mainland China. I am applying for the Ph.D. program in United States and fulfilling my final research step in NTHU. My current topic is in the area of computational electromagnetics and I have to perform all the physical models on computers. This project is in the final step and I hope that I can share the progress with you in the future. Besides, I am also a fan of literature, art and psychology.

研究概述

Hyperbolic Metamaterials (HMM) have exhibited great potential in spontaneous emission enhancement due to its large density of photonic states. However, research focus is predominantly on multilayer nanostructured HMM with its less complicated analytical method and more controllable fabrication process. For a dipole on a nanorod HMM, different locations within one unit cell should be considered to achieve the overall performance, posing difficulty on the grating optimization. To solve the problem, we simplify the nanorod assemble into an anisotropic slab, and optimize the bullseye grating to convert the near field evanescent modes into far field radiation power using Rigorous Coupled Wave Analysis (RCWA).

得獎感言

I am honored to be selected with the Living Grant for International Graduate Students of 2017 CTCI Foundation Science and Technology Scholarship. With this grant, I can support myself this semester at National Tsing Hua University and continue to fulfill my research and apply to the Ph.D. program in the United States. I want to express my deep and sincere appreciation to the CTCI Foundation for offering this grant. This grant is not just about financial support, but also encouragement and recognition. I will keep working and creating values in every day of my life, with the hope that one day I can also contribute by creating value and bringing happiness to others.



Chrisna Setyo Nugroho

國籍：Indonesia (印尼)

學校：National Taiwan Normal University

系所：Department of Physics

年級：4th year of doctoral course

研究主題：Top Quarks Rare Decays via Loop-Induced FCNC Interactions in Extended Mirror Fermion Model

傑出表現

1. 1 publication in international journal
2. Involved in 1 research project
3. NTNU Graduate Student Scholarship 2013, Physics Department Excellent Student Award 2014

自我介紹

My name is Chrisna Setyo Nugroho and from a small town in the east Java Province, Indonesia. I am currently a 4th year PhD student at National Taiwan Normal University, majoring in Physics. I am conducting research on mirror fermion model which could explain the mass of neutrino, the most mystery particle in particle physics. Understanding the properties of neutrino would be the most important goal in physics of this century. In particular, collaborators and I are investigating the flavor changing neutral current of top quark decays, which is another important aspect of particle physics. I am grateful that Taiwan allows me to collaborate with many good scientists who helped me a lot during my PhD research. I hope I can be a good scientist in the future and contribute to the field that I am working on.

研究概述

Flavor Changing Neutral Current (FCNC) interactions for a top quark t decays into V and q , with V represents neutral gauge bosons and q is the up-quark or charm-quark, are studied in the context of extended mirror fermion model. Whilst current limit on the branching ratios of these processes have been established at the order of 10^{-4} by the Large Hadron Collider (LHC) experiments, Standard Model predictions are at least nine order of magnitudes below. We show that one can probe for the process t decay into Z and c for a wide range of parameter space with branching ratios vary from 10^{-6} to 10^{-8} , which may be accessible at the LHC.

得獎感言

I am so pleased to be selected for the Living grants for International Graduate Students this year. Receiving this grant is such an amazing honor. I never imagined I would get such an honor. I realize that doing the research on high energy physics is quite challenging. There are a lot of unanswered questions of the physics that need to be explained. And to answer those challenges, it requires very hard effort of thinking. It's impossible for me to overcome the difficulties during my research without supports from my parents, teacher, friends, as well as this grant. I'm delighted to receive this grant, and thank you all.



Do Trong Nhan(杜崇楠)

國家：Vietnam (越南)

學校：National Cheng Kung University

系所：Department of Civil Engineering

年級：4th year of doctoral course

研究主題：Application of Discontinuous Deformation Analysis (DDA) and Physical Trap-door Model in Prediction of Surface Subsidence and Stress Distribution Induced by Underground Excavations

傑出表現

1. 2 publications in international journals
2. 3 papers in international conferences and 1 paper in domestic conference
3. Involved in 4 research projects
4. 臺北天母扶輪社頒發獎助學金, National Cheng Kung University International Graduate Students Scholarship for the Year 2014-2018

自我介紹

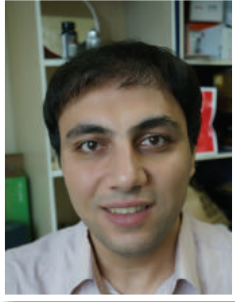
My name is Do Trong Nhan. I am from the south of Vietnam. I got married three years ago with a girl who is studying PhD course at the same university, National Cheng Kung University. We have a two-year old daughter now. This year is my 4th academic year of PhD course, with the major in Civil Engineering. Within three years, I finished the necessary coursework, qualifying exams, getting accepted of two international journals, and participating in conferences. I really love doing researches. I feel very enjoyable with academic environment, cultures, and life in Taiwan. I hope that I can find a good job in Taiwan after my graduation. Working in Taiwan is very useful for my future because it will help me to gain excellent experiences and improve professional networking with friends around the world.

研究概述

Rock behaviors and reactions during underground excavations, namely mining and tunnel, have attracted many researchers' attentions. Rock mass geometry has significant effects to surface subsidence and stress distribution around the underground excavations. There have been many methods involving analytical methods, numerical methods, and physical tunneling models applied to investigate surface subsidence problems and results from those methods have been relative accurate because of the complication of the researches. Stress distribution around the underground excavations has not been completely researched until now. In my research, the surface subsidence and the stress distribution of shallow as well as deep underground openings constructed in different kinds of rock geometry is formulated by two methods: physical model (trap-door model) and numerical simulation method (Discontinuous Deformation Analysis, DDA).

得獎感言

I am honored to be selected the Living grants for International Graduate Students. My family and I are all very grateful. Thanks to the grant, I can concentrate on my researches without worrying about financial issues. In addition, the grant shows that my study and researches are being recognized. I am able to do more study in order to graduate next year and find a good job in Taiwan. Having a good education is the best investment and CTCI Foundation grant provides me the chance to reach my dreams. Thank you so much to the CTCI Foundation! Best regards.



Hasan Mohd Mamdouh Suleiman Alhasan(艾俊賢)

國家：Jordan (約旦)

學校：National Taiwan University

系所：Computer Science

年級：5th year of doctoral course

研究主題： Energy-Efficient Anonymous Communication
Protocol for Wireless Sensor Networks

傑出表現

1. 2 publications in international journals
2. Involved in 2 research projects
3. National Taiwan University International Graduate Students Scholarship for the Year 2012/2013

自我介紹

My name is Hasan Alhasan and I am from Jordan. Currently, I am a PhD student at National Taiwan University, with major in Computer Science. I have finished five years of my PhD program by now. I am a person who has passion in doing researches. I am very motivated by the high quality academic environment in my university in Taiwan. My goal is to get a good job in Taiwan after graduation, and enrich excellent experience in my field.

研究概述

Anonymous communication is very important for many wireless sensor networks. The basic idea is simply to hide the identities of the sensor nodes to protect them against attackers. Due to limitations in the computing abilities of the sensor nodes, it is hard to achieve all the anonymities: the source anonymity, the communication-relationship anonymity, and the base station anonymity. There are other aspects that are influenced by the network's communication protocol, such as the energy efficiency and the productivity. An anonymous communication protocol will be proposed which attempts to achieve balance among the anonymity, the productivity, and the energy efficiency.

得獎感言

I'm almost lost for words. Being selected for Living grants for International Graduate Students is just amazing. I really do have to count myself lucky to be selected – but I did – and on a personal level, it is great for being recognized. With this grant in my hand, every time I look at it, I'll be reminded of this moment and how much it means to me. The recognition of my research gives me great confidence for the future. I'm delighted to receive this grant, and thanks to the CTCI Foundation and all.



Hor Kar Chun(何家駿)

國家：Malaysia (馬來西亞)

學校：National Chiao Tung University

系所：Institute of Electrical and Control Engineering

年級：1st year of doctoral course

研究主題：Fuzzy Neural Network Design and Its Applications

傑出表現

1. 1 publication in international journal (ICNC-FSKD 2017)
2. Involved in 3 research projects
3. 國立交通大學研究所優秀僑生獎學金(2016)

自我介紹

My name is Hor Kar Chun, from Malaysia. I am a 1st year PhD student at Institute of Electrical and Control Engineering, National Chiao Tung University. My advisor is Professor Chi-Hsu Wang. My research area is focused on the application and design of Fuzzy Neural Network (FNN), and I am very interested in it. I am going to finish the qualifying exam next summer. I will do my best during the PhD program and hopefully my research papers will be accepted and published on the famous and international IEEE Journal.

研究概述

Nowadays, Fuzzy Neural Network has been widely adopted in various kinds of areas and engineering applications for problem solving. FNN has the characteristic of linguistic information from fuzzy system and learning ability from neural network. It will follow universal approximate theorem if it is well-constructed. The maximum number of training samples must within the capacity of FNN, and by using dynamic optimal learning algorithm to obtain the optimal learning rate, the training will guaranteed to converge. The updated capacity bound of FNN and a new complete training algorithm will be proposed to guarantee the FNN training convergence.

得獎感言

I'm so honored and grateful to be the recipient of this grant. As a 1st year doctoral student, it is a great honor and privilege to be considered for this grant, thank you CTCI Foundation. I also want to thank Professor Chi-Hsu Wang for the precious advice and continued supports. At last, I want to dedicate this grant to my parents, because of their faith in me that I can do great today. I truly appreciate the supports and I believe in myself that I will achieve my future goals. Thank you all!



John Franklin Harrison(哈里森約翰)

國家：Canada (加拿大)

學校：National Cheng Kung University

系所：Department of Environmental Engineering

年級：5th year of doctoral course

研究主題： Application of Landslide Inventory Data for the Evaluation of Landslide and Sedimentation Issues in the Gaoping River Basin, Taiwan

傑出表現

1. 2 publications in international journals
2. Involved in 3 research projects
3. National Cheng Kung University Distinguished PhD Scholarship 2013-2016

自我介紹

My name is John Harrison. I am a Canadian PhD student in the department of Environmental Engineering, at National Cheng Kung University, Tainan. I have completed four years of my PhD program. I just recently published an article on the topic of landslide susceptibility modeling in the Gaoping River basin, Taiwan. I have a passion for studying and learning about the mountainous terrain of Taiwan. I believe my research can serve to improve the safety of mountainous communities, which can make Taiwan a better place.

研究概述

Inventory-based Landslide Susceptibility Index (LSI) models based on the selection of causative factors and functional relationships between factors, and are used with the integration to a hazard-warning model. Typhoon-training events are used to obtain data representing environmental conditions where landslides are likely to occur. These well-defined data sets are used to select representative causative factors. Modulating factor combinations for the hazard warning can also mirror true environmental conditions, yielding more representative model results.

得獎感言

First of all, I'd like to thank the CTCI Foundation for selecting me for the Living grants for International Graduate Students. It's an honor to be chosen. I know there are many passionate and talented researchers studying in Taiwan, so I am very grateful to be allowed to use this grant in continuing my further researches. This is a wonderful moment for me to be with so many other amazing researchers, so I am humbled to be here. Receiving this grant will push me to achieve my dream of completing my PhD degree. Thank you again for the grant!



Kamau King'ora(卡茂欽)

國家：Kenya (肯亞)

學校：National Taiwan University

系所：Department of Mechanical Engineering

年級：3rd year of doctoral course

研究主題：Multiphase Flow in a Convective Loop Capillary Tube

傑出表現

1. 3 publications in international journals and 2 publications in domestic journals
2. Involved in 2 research projects

自我介紹

My name is Kamau King'ora from Kenya. I am a PhD student at National Taiwan University and major in Mechanical Engineering and specifically in numerical simulation. I finished my MSc in National Taiwan University of Science and Technology in 2015 before enrolling for PhD in the same year. I graduated with a GPA of 3.96 which is almost perfect score. I did my BSc in Mechanical and Manufacturing Engineering in University of Nairobi. I graduated with a first class honor. I hope the skills I have acquired through my academic life will propel me to do even better.

研究概述

Convective polymerase chain reaction using a single isothermal heater is attractive due to its simplicity and high speed of DNA amplification. In this study, we simulate natural convection driven flow in capillary loop convective polymerase chain reaction platform. A U-shaped loop glass capillary tube is used as a PCR reagent container. This tube defines a path along which PCR reagents flow, ensuring they visit all intended reaction sites. We wish to determine the steady state temperature distribution in a clcPCR tube and the average time required for PCR reagents to make one complete cycle around the clcPCR tube.

得獎感言

A few years ago, a colored man would not share the joy that life brings with his non-colored brother just for racial reasons. Today, I am proud to have been considered for such a prestigious grant my color notwithstanding. This is a motivation not only to me but also to all poor children in Africa who feel they are not good enough because of their background. I send my gratitude to my college for nominating me and the people of Taiwan at large for sharing such remarkable values with us. I receive this grant with all humility.



Kaunya Albert(愛瑞雅)

國家：India (印度)

學校：National Chiao Tung University

系所：Department of Applied Chemistry

年級：4th year of doctoral course

研究主題：Fabrication of Bio-Derived Microcomposite for Perfluorinated Compounds (PFCs) Removal and Decomposition

傑出表現

1. 12 publications in international journals
2. Participated in 2 international and 3 national conferences
3. Involved in 2 research projects
4. National Chiao Tung University - Award of Outstanding Students 2017/2018

自我介紹

I am Karunya Albert, doing my fourth year Ph.D. research under the guidance of Dr. Hsin Yun HSU, NCTU, Hsinchu, Taiwan. I am from India and completed my Master's degree in Biotechnology. I am very passionate towards research especially in the field of biodegradation. My current work is on decomposition of perfluorocompound using non-toxic biocomplex like diatomite modified with methylene blue, which generates Reactive Oxygen Species (ROS) during irradiation of 633 nm laser. The goal of this research is to provide a green environment and happy to be a part of green revolution, an inevitable need of current scenario.

研究概述

Perfluorinated Compounds (PFCs) have been found globally and are proven carcinogens. However, decomposition of these PFCs has been inefficient via conventional treatments and it has become a universal environmental contaminant. In this proposal, the photosensitizer-functionalized, bio-derived diatomite microcomposites will be developed to facilitate the adsorption and the following light-triggered decomposition of PFCs. By taking advantages of the electrostatic interaction of positively charged MB and negatively charged PFOA and PFOS, we expect more efficient adsorption of these PFCs on the surface of MB-modified diatomite, facilitating the light-triggered in situ degradation.

得獎感言

I feel proud to receive this prestigious Living grants for International Graduate Students. This is a great achievement in my career. First of all, I would like to dedicate this grant to all my teachers, especially, to my beloved advisor Dr. Hsin Yun HSU for her support and encouragement throughout my research. I would also like to thank my parents and my husband for their encouragement to allow me come this far to pursue my dreams. I am delighted to receive this grant from CTCI Foundation for my hard work and passion towards research. Thank you all.



Kyaw Kyaw Aung(王子聖)

國家：Burma (緬甸)

學校：國立臺灣大學

系所：光電工程學研究所

年級：碩二

研究主題：多投影式光場三維顯示系統成像品質之優化

傑出表現

1. 發表國際研討會2篇
2. 參與專案計劃4項
3. 臺大勵學獎學金(2015)、臺大優秀僑生獎學金(2016)、FCRA在臺優秀台大電機緬甸僑生(2014)

自我介紹

我是王子聖，來自緬甸，父親是華人，母親是緬甸少數民族傣族人。大學畢業於臺大電機系，目前就讀於臺大光電工程研究所碩士班，顯示光學實驗室，指導教授為林晃巖博士，目前研究方向為光場三維成像品質優化。作為項目核心成員，我積極參與了「臺灣大學邁向頂尖大學計畫-資電中心整合性工作項目」、「科技部專題補助計畫-裸眼式立體顯示器影像品質之研究」、「臺大-奇景產學合作計畫」等項目。

研究概述

光場顯示為一種新興的三維顯示技術。然而，對多投影式的空間多工水平光場平面顯示器來說，在實際的應用系統中，會因為斜向投影及顯示亮度不均等問題影響到觀看的品質。我們針對影像失真問題提出了一種形變校正演算法，該算法通過變換調整影像源的成像位置對所成影像進行修正，達到優化成像品質的目的；此外，對於顯示系統亮度不均的問題，我們通過對每一個視角所對應的投影畫面區域的像素值進行了調制，最終提升成像的顯示品質。

得獎感言

十分榮幸獲得106年度「中技社科技獎學金」。感謝中技社頒發助學金、各位評審委員對我的支持與鼓勵，以及特別感謝我的指導教授林晃巖博士對我的悉心教導與實驗室所有成員對我的關懷與幫助。這份助學金對我今後的科研工作有非常大的幫助，我將更加努力，把這份感謝與感恩化作行動，投入到今後的科研工作中，期能獲得更大的成就。



Le Thi Tuyet Mai

國家：Vietnam (越南)

學校：National Taipei University of Technology

系所：Graduate Institute of Technology Engineering

年級：4th year of doctoral course

研究主題：Study on a Novel Aliquat 336/PolyHIPE Membrane and Potential Application for Heavy Metals Separation

傑出表現

1. 1 publication in international journal and 1 in international conference
2. Involved in 1 research project

自我介紹

My name is Le Thi Tuyet Mai and I am from Vietnam. I am a PhD student of Graduate Institute of Technology Engineering at National Taipei University of Technology. I am passionate about chemistry and environmental science. I am a lecturer of environmental science at Hanoi University of Natural Resources and Environment (HUNRE). My goal is to be a university professor in HUNRE and share latest knowledge to students. At the same time, to follow environmental protection project in Vietnam.

研究概述

As industry grew over the past few decades in Vietnam, there had been an increasing concern in the release of contaminants and other wastes into the environment. One of the major environmental risks increases due to heavy metals, which are toxic, persistent and unable to be degraded chemically or biologically in the nature environment. The development of heavy metal separation technology has drawn me great interests. A porous membrane with highly interconnecting structure will be proposed, which attempts to achieve high separation factor, high diffusion and low energy requirements.

得獎感言

I am extremely honored to receive such an important Living grants for International Graduate Students of 2017 CTCI Foundation Science and Technology Scholarship. Knowing I have been selected for this grant makes me feel so proud and lucky. This grant is very meaningful to me not only financially, but emotionally as well, as it has strengthened my confidence. I feel that I am one step closer to achieving my goals. Thanks for your choice and for trust in me. I promise to get even better at my work. Thank you!



雷城

國籍：中國

學校：國立清華大學

系所：化學工程研究所

年級：博三

研究主題：和頻光譜和超快非輻射躍遷過程的理論研究

傑出表現

1. 發表國外期刊1篇、發表國內期刊1篇
2. 參與專案計畫3項
3. 國立交通大學研究生交流獎學金，全國(中國)大學生英語能力競賽優秀獎

自我介紹

我是雷城來自中國湖北，目前就讀於國立清華大學化學工程系博士班，導師為陳壽安教授，且由國立交通大學林聖賢教授共同指導。我在大學及研究生期間曾參與多個專案，主要研究方向是光化學，博士期間研究興趣為和頻光譜和超快非輻射躍遷過程，發表SCI 索引論文二篇。博班來臺之後，在兩位教授的指導下，繼續光譜方向的研究，並希望在學術上不斷進步。

研究概述

和頻振動光譜(SFG)作為二階非線性光學技術，具有介面選擇性和靈敏性，能測量出分子層面的介面資訊，包括介面分子取向、結構以及介面分子的動力學資訊，是研究介面的最有效手段之一。目前，理論研究了兩種和頻光譜：表面增強拉曼散射光譜(SERS)和電子振動光譜(ESFG)。另一方面，隨著飛秒時間分辨光譜技術的發展，採用絕熱近似的方法去研究芳族二嗪分子(吡嗪，嘧啶和噻嗪)的非輻射躍遷壽命，理論動力學模擬與實驗結果一致。

得獎感言

非常榮幸獲得106年度「中技社科技獎學金」之境外生生活助學金，非常感謝中技社給我機會和榮譽，也感謝評審委員們，這筆助學金對我接下來的研究生活大有幫助。同時，非常感謝導師林聖賢教授和陳壽安教授對我研究的耐心指導，也謝謝實驗室同仁們對我各方面的熱心幫助，謝謝家人對我的支持。懷著感恩的心，我將繼續努力，在科學研究的道路上繼續前行。

I am honored to receive the Living Grant for International Graduate Students of 2017 CTCI Foundation Science and Technology Scholarship. This grant will help me to complete my study. Thanks very much to the CTCI Foundation, the review committees. As well, I am very grateful to my tutors Professor S.H. Lin and Professor Show-an Chen, and thanks to my laboratory classmates, and the my parents for all the supports. I will work hard on the future scientific researches.



Mohammad Bassam Mohammad Alkhaleefah(沐海)

國家：Jordan (約旦)

學校：National Taipei University of Technology

系所：Electrical Engineering and Computer Science

年級：3rd year of PhD

研究主題： Classification of Breast Cancer in its Early Stages
in Mammogram Images

傑出表現

1. 3 publications in international journals
2. Participated in 1 international conference
3. Involved in 1 research project in the Lab of Remote Sensing and Medical Image Processing

自我介紹

My name is Mohammad Alkhaleefah from Jordan. I am currently a third year PhD student at Department of Electrical Engineering, National Taipei University of Technology. I belong to the Lab of Remote Sensing and Medical Image Processing which is managed by Professor Chao-Cheng Wu. My research is about medical image processing, particularly breast cancer diagnosis in mammogram images. I hope I can improve my abilities to understand and solve research problems, increase my confidence, and gain skills during my PhD program that may lead to a better job in the future.

研究概述

Since breast cancer is the most commonly diagnosed cancer type among women, Computer-Aided Diagnosis (CAD) systems have been developed in the recent years to help radiologists and doctors with the detection and diagnosis of abnormality seen on breast imaging exams. The purpose of this research is to develop an algorithm aiming at the detection of breast cancer in mammogram images in its early stages before going further to expensive, time consuming, and painful procedures such as biopsy. To clarify the differentiation between malignant and benign breast cancer by using medical images processing techniques is the main goal of this research.

得獎感言

Hello everyone! I would like to start my speech by saying congratulations to myself and those who also have been selected for CTCI Foundation Science and Technology Scholarship. And I would like to thank CTCI Foundation for supporting not only domestic students but also overseas students with outstanding performance but with economic difficulties to continue their study. This Living Grant means a lot to me and I am very grateful for everyone who made this possible. Thank you everyone. I wish you all the best.



Ngui Yin Jeh(魏殷哲)

國家：Malaysia (馬來西亞)

學校：National Chiao Tung University

系所：Department of Civil Engineering

年級：4th year of doctoral course

研究主題：Broadband Dielectric Spectroscopy in Porous Media

傑出表現

1. 2 publications in international journals and 1 publication in domestic journal
2. 2 publications in international seminar papers and 2 publications in domestic seminar papers
3. Involved in 21 projects

自我介紹

I am Ngui Yin Jeh from Malaysia, currently pursuing my full time PhD studies in National Chiao Tung University, majoring in Civil Engineering (Geotechnical Division). I am involved in Prof Chih-Ping Lin's research group, contributing in various geophysical exploration works and had participated in 21 projects so far. My thesis dissertation mainly involved in-depth research on broadband dielectric spectroscopy, developing robust in-situ dielectric spectroscopy monitoring techniques for geo-environmental and geotechnical field. Despite technical works, I also assist the reception of international scholars, due to my language fluency in English, Malay, Mandarin, Hakka and Cantonese.

研究概述

Broadband dielectric spectroscopy is a powerful tool to reveal and characterize materials' complete dielectric properties. Dielectric spectrum provides valuable insights regarding the storage and dissipation of electric and magnetic fields in materials. Characterization using vector network analyzer is currently time-consuming, tedious, expensive and requires complex system calibration. Whereas conventional time-domain reflectometry (TDR) signal interpretation only measured single-valued apparent dielectric constant, discarding valuable information in multiple reflections. Niching between these conventional approaches, this study proposed two innovative signal processing methods capable of measuring the frequency-dependent complex dielectric spectrum, by fully utilizing TDR reflection signals. Dielectric spectroscopy from 10MHz-1GHz measured from the proposed methods is potentially beneficial in revealing the dielectric behaviour of porous media, particularly the soil medium.

得獎感言

I am grateful for being recognized and selected by the CTCI Foundation to receive the Living Grant for International Graduate Students of 2017 CTCI Foundation Science and Technology Scholarship. Thank you for providing me with the crucial fund I need to support my research and living expenses, especially with limited working opportunity for a full-time PhD student. With the provision of the Living Grant, I can now relief and pursue my research work without worries. I would like to thank my advisor Professor Chih-Ping Lin for referring me to this grant application, along with my wife Carol Liao for all the support during my studies. Thank you all.



Sathesh Tamilarasan

國家：India (印度)

學校：National Taipei University of Technology

系所：Department of Energy and Refrigerating Air-
Conditioning Engineering

年級：1st year of master's course

研究主題：Optimal Operating Strategy of Air-Conditioning
System Using Knowledge Discovery with Data
Mining

傑出表現

1. 1 publication in international journal
2. Involved in 2 research projects

自我介紹

I am Sathesh Tamilarasan, a mechanical engineer from National Taipei University of Technology. I am very passionate to learn new skills in mechanical engineering and curious to explore new ideas and designs related to mechanical and electronics. In addition, I have some programming skills in C, C++, C#, Vb.net, Python and R. I believe that hard work never fails. I am certain that my interests would guide me on my choice of education. In my opinion, education without interest is futile, solely because without interest one can never excel in any field.

研究概述

Energy conservation is the hot topic in contemporary researches of every nation. Geologically, Taiwan is located in the subtropical region, which has very high temperature during summer. During this period, people often utilize their air conditioners. In addition, the consumption of electricity is high as compared to other seasons. This project illustrates the method to figure out the low energy consuming chiller among others in air conditioners by RDotNet Programming that applying data mining strategy. By coding in RDotNet is mainly familiar with multiple regression analysis and its accuracy reaches 99% than any other methods.

得獎感言

First of all, I would like to convey my sincere and heartfelt gratitude to the honorable CTFCI Foundation and its committees for giving me this prestigious grant. The scholarship and grant sponsored by CTFCI Foundation really inspire not only me, but also a lot of other overseas students in Taiwan. There are many obstacles I have faced during my academic journey but your grant resolves one of the major obstacles, which is financial difficulty. Honestly, I am jubilant and do not have exact words to express my feelings and gratitude. This grant motivates recipients to be enthusiastic about even better performance of their academic studies. I am faithfully thrilled to receive this grant.



Thirumalraj Balamurugan

國家：India (印度)

學校：National Taipei University of Technology

系所：Department of Chemical Engineering and Biotechnology

年級：3rd year of doctoral course

研究主題：Influence of Gold Nanoparticles Supported Carbon Based Nanomaterials for Electrochemical Sensor and Biosensor Applications

傑出表現

1. 30 research articles in highly reputed international journals
2. 6 international conferences and 6 domestic conferences (oral and poster presentation)
3. Current research involved in high performance of Li-S and Li-ion battery
4. Distinguished paper award from Association of Chemical Sensors, Taiwan, 2017 ; Sunshine scholarship award for best research student of the year 2015~2016 ; Taipei Tech special scholarship for outstanding performance of the year 2015-2017

自我介紹

My name is Balamurugan Thirumalraj and I received Bachelor (2008) and Master (2010) degree in Department of Chemistry, Madurai Kamaraj University, India. Subsequently, I received Ph.D. degree in 2017 from Department of Chemical Engineering and Biotechnology (Advisor: Professor Shen-Ming Chen) at National Taipei University of Technology, Taiwan; Currently, working as a Post-Doctoral research fellow in Department of Chemical Engineering, National Taiwan University of Science and Technology (Advisor: Professor Bing-Joe Hwang), Taiwan. The research mainly focuses on the development of advanced Li-ion and Li-S batteries and electrocatalytic applications. I also specialize in electrochemical sensor and biosensor applications.

研究概述

Gold Nanoparticles (AuNPs) play a key role in nanotechnology and provide the opportunities for development of a new generation of sensing tools. Besides, the carbon based nanomaterials have attracted tremendous interest in recent years due to its unique electrical, mechanical, chemical and optical properties. These materials are also considered as ideal matrix for the development of highly sensitive and selective electrochemical sensors and biosensors. My research focuses on the synthesis of different AuNPs supported carbon based nanomaterials for various sensor and biosensor applications. Mainly, the reduced graphene oxide (RGO) and fullerene (C60) have been utilized as the carbonaceous supporting materials.



得獎感言

I am deeply honored to have been selected for the Living grants for International Graduate Students. I would like to thank my beloved supervisor Professor Shen-Ming Chen of NTUT for giving me such a precious opportunity to work with him. My special thanks go out to my lab mates, all faculty members, Office of International Affairs, and Library staffs from NTUT for their valuable academic support. Also, I am thankful to the CTCI Foundation for motivating all international students in Taiwan. Thanks to CTCI Foundation and all my well-wishers. I am very happy to receive this grant.



Vijjapu Mani Teja(德維杰)

國家：India (印度)

學校：National Chiao Tung University

系所：Department of Electronics Engineering

年級：2nd year of master's course

研究主題：Engineering of ALD Grown CMOS-Compatible ReRAM

傑出表現

1. 1 publication in international journal (Co-Author)
2. 3 papers in international conferences and 1 paper in domestic conference
3. Involved in 3 research projects
4. NCTU Outstanding International Student Scholarship Award

自我介紹

I am pursuing Masters in a solid state electronics group (NanoST) at Dept. of Electronics Engineering, NCTU, under the supervision of Professor Tuo-Hung Hou. I am from humble and motivating family in India. I am an enthusiastic researcher driven by inspirational line of Robert Frost “Miles to go before I sleep”, with a strong desire to serve the society. Before joining NCTU, I have been involved in fascinating research projects in India’s premier institutes, such as Physical Research Laboratory and IIT Madras. Currently at NCTU, I am working on the development of CMOS-compatible ReRAM for storage class memory and binary synaptic applications.

研究概述

A CMOS compatible bipolar filamentary ReRAM grown by atomic layer deposition (ALD) showing uniform switching and excellent memory window is fabricated. The significance of interfaces in bilayer device is investigated, it is shown that insertion of thin ALD grown Al_2O_3 film improves uniformity and endurance of the device. Uniform Ni/ HfO_2 -based valance-change memory (VCM)-type bipolar ReRAM was fabricated by tuning the a) dielectric thickness and b) oxygen profile at the interface for controlled switching of the devices. The demonstrated VCM-type ReRAM is not reported elsewhere and this device can be a potential candidate for CMOS compatible high density crossbar memory arrays and binary synaptic applications.

得獎感言

First of all, I really appreciate the CTCI Foundation for selecting me as a recipient of Living grants for International Graduate Students. I feel very privileged and touched upon receiving the grant notification as I knew it is very tough to get shortlisted for being a master student. It is amazing to know that there are always these networks of support out there assisting international students in their pursuits. I am incredibly honored to be one of the recipients. I am thankful to my advisor Professor Tuo-Hung Hou for his supports. I am grateful for my parents for everything they showered upon me, without their encouragement I wouldn't have been a foreign student pursue higher studies in Taiwan.



于喬

國家：中國

學校：國立臺灣科技大學

系所：資訊工程研究所

年級：碩二

研究主題：運用高效的過濾法加速K-means演算法

傑出表現

1. 發表國際會議論文1篇
2. 參與專案計畫2項
3. 東海大學學術成果獎學金、東海大學書卷獎、東海大學大陸學生獎學金、東海大學榮譽學生

自我介紹

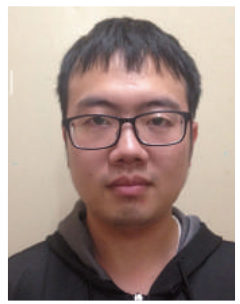
我是于喬，來自中國大陸的福建福州。目前就讀於國立臺灣科技大學資工所碩士班，資料探勘實驗室，導師為戴碧如教授。我的研究興趣為加速k-means演算法。在研究所研讀期間，除了科研項目，還參加資料探勘競賽，如KDDCUP, Kaggle競賽，都取得了不錯的成績。現在我正在德國阿亨工業大學交換學習，也在積極尋找實驗室工作，希望能做深度學習的相關研究，未來希望能在臺灣或者德國繼續攻讀學位。

研究概述

K-means是資料探勘和機器學習中眾所周知的分群算法。它廣泛應用於計算機視覺、市場分割、社會網絡分析等各個領域，然而，k-means在不必要的距離計算上浪費大量的時間。因此，加速k-means已經成為一個有價值和重要的研究，加速k-means演算法可以獲得與標準k-means演算法相同的結果，但可提高原始k-means演算法速度。在這篇論文中，我們提出了一種新的加速k-means演算法，稱為Fission-Fusion k-means，它在速度上優於目前最先進的加速k-means演算法，此演算法額外佔用的內存上也遠小於其他加速k-means演算法。在實驗中，現實世界的資料集驗證了在大多數情況下，Fission-Fusion k-means演算法顯著的優於目前最先進的加速k-means演算法。此外，對於更分散的及有著自然群集的資料集，我們的演算法也相對於其他加速k-means演算法更為快速。

得獎感言

我很榮幸能夠得到106年度「中技社科技獎學金」之境外生生活助學金，這筆助學金對我未來的研生活有很大的幫助。目前我正在國外交換學習，這筆助學金可以解決大部分的生活支出。謝謝中技社，也謝謝導師戴碧如教授耐心指導以及實驗室同學們對我各方面的熱心幫助。我會再接再勵，用更好的研究回饋大家。感恩！



莊嘉培

國家：中國

學校：國立清華大學

系所：物理學研究所

年級：碩二

研究主題：以角解析光電子能譜及低能電子繞射研究鉛金薄膜性質 (Majorana Fermion)

傑出表現

1. 參與專案計畫2項
2. 國家大學生創新實踐項目優秀獎

自我介紹

我是莊嘉培，來自中國大陸的福建省泉州市，目前就讀於國立清華大學物理所碩士班，最近在申請選讀博士。物理是探索未知的有力工具，我希望可以全力投入在這個我喜愛的領域。

研究概述

我選擇的研究方向是在實驗室開發出來的鉛金合金薄膜，並配合以角解析光電子能Angle resolved photoemission spectroscopy (ARPES)與能電子繞射Low Energy Electron Diffraction (LEED)觀察分析表面態。這薄膜擁有非常強大的軌道與自旋角動量耦合的Rashba Effect。在這合金薄膜之下有具備超導溫度的鉛薄膜，這兩種性質合在一起，會產生有趣的物理現象，譬如最近熱門的馬約拉納Majorana費米子。Majorana Fermion由物理學家Majorana提出，定義是一個粒子是它自己的反身粒子。

得獎感言

非常榮幸能夠得到「中技社科技獎學金」之境外生生活助學金，我和我的家人都十分感謝中技社及評審委員們。這筆助學金將對我接下來的研究學習生活有極大幫助。我將繼續努力，爭取在研究中有出色的成果。

It is my great honor to receive the Living Grant for International Graduate Students of 2017 CTCI Foundation Science and Technology Scholarship. My family and I are very grateful to CTCI Foundation and the review committees. This grant is very helpful to my study and my living in Taiwan. I will continue to work hard to do my research.

中技社科技獎學金

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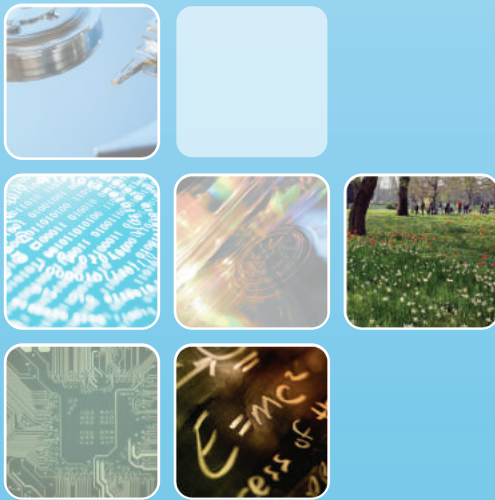
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