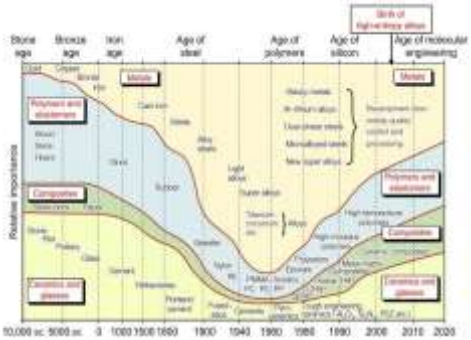

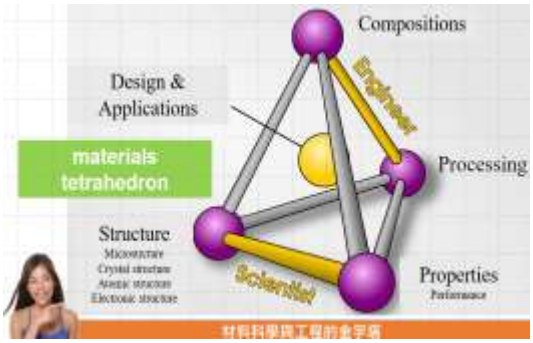

講題: 我為何學習材料科學及工程學科? 新奇、前進、使命

演講時間：2024.11.16 周六，上午 11:25 ~ 11:55

演講摘要：本回演講味了讓高中生同學了解材料科學與工程(MSE)的技術和創新觀點及研發趨勢。手先簡單介紹本人的職涯經歷，從在台灣讀本科的核工程專業轉向美國研究所學習先進陶瓷材料之研究，也在高科技陶瓷公司任職研發經理，最後成為一位大學材料系老師。藉此機會給年輕觀眾分享一些材料研究方面的有趣故事及幾個 MSE 產業創新案例。MSE 與其他學科的跨學科前沿實踐正在不斷湧現，並向更寬闊的視野拓展，包含機器人與自動化、人工智慧、大數據、智慧工廠、智慧製造 4.0、資訊與通訊(ICT)、虛擬實境(VR)、積層製造(AM)或 3D 列印、生物醫學、綠色能源、永續發展和環境保護等。關於工業 4.0 架構，美國、中國和德國提出的產業研究策略剛巧有一共同點，即如何面對材料科技的競爭和挑戰。當今世界面臨以地球、人類、繁榮為核心的共存共榮的戰略思考(3P 方案)。在進入快速迭代的資訊革命時代，特別鼓勵學習 MSE 的年輕學生能常重新思考自主學習、知識管理、創造力和個人成長等關鍵面向。

The scope of this talk aims to give our audience an overview on technical and innovative perspectives as well as the trend of R&D activities on materials science and engineering (MSE) upon their trends. Starting with a brief scan of my personal career deployment, I shifted from my major of nuclear engineering as undergraduate training in Taiwan to pursuit of the research on hi-tech ceramics in graduate school in the United States, then became a R&D manager in an advanced ceramics firm, and finally is a professor in MSE department at Feng Chia University. I would like to share young audience some interesting stories for materials study and a couple of interesting industrial innovation cases in the MSE field. The interdisciplinary cutting-edge practice of MSE and other disciplines is currently emerging and expanding to a wider horizon, such as robotics and automation, artificial intelligence, big data, smart factories, smart manufacturing 4.0, information and communications (ICT), virtual reality (VR), 3D printing or additive manufacturing, biomedicine, green energy, sustainability and environmental protection, just name a few. Interestingly the industrial research strategies raised by USA, China and Germany happened to have a common sector, namely dealing with challenges and competition of materials technology. Today, the world is facing a strategic thinking on coexistence and co-prosperity that focuses on planet, people, and prosperity (3P scheme). In this fast-paced information revolution era, young students to study MSE are encouraged to often re-think key aspects such as self-directed learning, knowledge management, creativity and personal growth.

駱榮富教授簡歷: 逢甲大學材料科學與工程學系專任教授，兼逢甲大學資訊總處「次世代數位平台」與教務處較發中心的數位教學諮詢顧問、逢甲大學儒道人文學社指導顧問、綠色化學協會亞太分會副會長(總部設於義大利)、台灣真空學會(TVS)常務監事。曾任台灣電子書供給合作社(TEBSCo)理事主席、中華資訊素養學會(CILA)理事、逢甲大學圖書館館長及逢甲大學雲端學院執行長。廈門大學、西安交通大學、山

東大學客座教授、印度理工學院坎普爾分校(IIT Kanpur)訪問教授、俄羅斯聖彼得堡 Ioffe 國立物理技術研究院訪問教授、泰國曼谷國立朱拉隆功 Chulalongkorn 大學客座訪問教授与泰國清萊府國立皇太后大學(Mae Fah Luang University)客座訪問教授、印度 Mother Teresa 大學與 Annamalai 大學博士論文之海外評審委員。美國伊利諾大學香檳校區(UIUC)材料科學及工程博士、美國壬色列理工大學(RPI)核子工程碩士、清華大學畢業。

Professor Rong-Fuh Louh is the faculty member of Department of Materials Science and Engineering (MSE), Feng Chia University (FCU), Taichung, Taiwan since 1993. Currently he also serves as a member of directorial committee of the "Next Generation Digital Platform" of the General Information Office and the Teaching Excellence Center of the Academic Affairs Office at FCU. Prof. Louh is the vice president of the Asia-Pacific Branch of the Green Chemistry Association in Italy and a standing supervisor of Taiwan Vacuum Society (TVS). He was elected as the chairman of the board of directors of the Taiwan Electronic Book Supply Cooperative (TEBSCo), the director of the Chinese Information Literacy Association (CILA), the Director of the Feng Chia University Library, and the executive director of the Cloud Academy of FCU. He was the visiting professor of Xiamen University, Xi'an Jiaotong University, Shandong University in China, Indian Institute of Technology in Kanpur (IIT Kanpur), India, The Ioffe State Institute of Physics and Technology in St. Petersburg, Russia, Chulalongkorn University in Bangkok, Thailand and Mae Fah Luang University, Chiang Rai, Thailand. He served a member of overseas review committee for doctoral dissertations for Mother Teresa Women's University (MTWU) in Kodaikanal, and Annamalai University in Chidambaram, which are located inTamil Nadu, India. Prof. Louh earned his Ph.D. degree in MSE from University of Illinois at Urbana-Champaign (UIUC), Illinois and M.S degree in Nuclear Engineering from Rensselaer Polytechnic Institute (RPI), Troy, New York.

Prof. Rong-Fuh Louh is the supervisor of the Electroceramics and Nanomaterials Lab of MSE department at FCU. His research interests and experiences are in the area of [1] energy materials: development and research of PEM/DMFC fuel cells, ZnS/ZnO buffer layers of CIGS thin film solar cells, electrode materials of supercapacitors, and transparent conductive films; [2] electronic ceramic materials regarding the ferroelectric ceramics, piezoelectric ceramics, functional ceramic films and ceramic gradient materials as well as development of flexible electronic material manufacturing process and component design; [3] ceramic processes such as electrophoretic deposition, sol-gel process, chemical bath deposition, continuous ion layer adsorption reaction, electrodeposited thin film coating Covering, chemical mechanical synthesis, microwave sintering, and electrospinning technologies; [4] electrophoretic self-assembly (EPSA) to fabricate opal-structured photonic crystals and 3-D ordered porous materials for design of optoelectronic devices, plasmonics and metamaterials; [5] nanoscaled biomaterials with development of biomimetic materials and quantum dots; [6] ultra-precision grinding process for structural ceramics such as mirror grinding, chemical mechanical polishing, nanoscaled surface planarization, and rotary table-assisted nano-polishing; and [7] laser material processing using Nd:YAG and CO_2 lasers for laser cutting, drilling, and surface heat treatment.