國立清華大學第十屆傑出產學研究獎得獎人簡介

材料科學工程學系 賴志煌 清華講座教授

賴志煌教授自 1998 年回國至清華大學材料系任教 25 年，在研究方向上以「奈米薄膜製程」為主軸，堅持且深耕於磁性薄膜元件與薄膜太陽能電池兩個領域，此二領域以發展資訊儲存與再生能源的新材料為主軸，主要應用於磁性記憶體(MRAM)、磁紀錄碟片與薄膜太陽能電池。

2019 年在《Nature Materials》發表以反鐵磁材料引入 MRAM， 2023 年以使用非毒性氣體製作 CIGS 太陽能電池達到最高效率，成果發表《Advanced Energy Materials》。此外，他的其他重要研究成果也都發表在國際頂尖期刊上，並將關鍵技術技轉給業界。賴教授的研究不僅具基礎科學的創新，更具有實用面的產業價值，在產學合作上垂直整合產學生態鏈，和合作公司建立長期夥伴關係。此外他積極整合上、中、下游廠商，建立前瞻磁性元件平台，另外結合開發製程及檢測量測團隊，成立「CIGS 太陽能薄膜電池研發中心」。從 2018 年至 2023 年產學合作件數達到 34 件，技轉金額超過千萬，期間更獲證 9 項專利。

賴教授在產學與學術上的傑出表現備受肯定，獲得許多重要的獎項，包括 Micron Chair Professor 、Asian Union of Magnetics Societies (AUMS) Award、中國材料科學學會「陸志鴻先生紀念獎」、IEEE Fellow、MRS-T fellow、東元獎、侯金堆傑出榮譽獎、科技部傑出研究獎及台灣磁性技術協會磁性獎章。賴教授目前為清華大學講座教授並擔任半導體學院副院長，在產學合作推動上不遺餘力，具體落實研究成果產業化，並進而提升台灣相關的產業技術水準。

Professor Chih-Huang Lai has joined the Department of Materials Science at National Tsing Hua University for 25 years. His research primarily focuses on "processing of nano-scale film" and he has consistently delved into two key areas: magnetic thin-film devices and thin-film solar cells. These two fields revolve around the development of new materials for information storage and renewable energy, with applications in magnetic random-access memory (MRAM), magnetic recording disks, and thin-film solar cells.

In 2019, he published a groundbreaking paper in "Nature Materials" that introduced the use of antiferromagnetic materials in MRAM. In 2023, he achieved the highest efficiency in CIGS (Copper Indium Gallium Selenide) solar cells by using non-toxic gases, and his findings were published in "Advanced Energy Materials." Furthermore, his other significant research outcomes have also been published in top international journals, and he has successfully transferred key technologies to the industry.

Professor Lai's research is not only innovative in basic science but also highly practical in terms of industrial applications. He has actively integrated the industry-academia ecosystem and established long-term partnerships with collaborating companies. Additionally, he has fostered collaboration among upstream, midstream, and downstream manufacturers, forming an advanced platform for magnetic devices. He has also combined process development and measurement teams to establish the "CIGS Solar Thin-Film Cell Research Center." Between 2018 and 2023, he has engaged in 34 industry-academia collaboration projects, with technology transfer exceeding ten million, and obtained nine patents during this period.

Professor Lai's outstanding performance in both industry-academia and academia has earned him numerous prestigious awards, including the Micron Chair Professorship, the Asian Union of Magnetics Societies (AUMS) Award, the Chinese Materials Research Society's "Mr. Lu Zhihong Memorial Award," IEEE Fellow, MRS-T Fellow, the Teco Award, the Hou Jindui Outstanding Honorary Award, the Ministry of Science and Technology's Outstanding Research Award, and the Taiwan Magnetic Technology Association's Magnetic Award.

Currently, Professor Lai holds the position of Chair Professor and serves as the Associate Dean of College of Semiconductor Research. He is unwavering in his efforts to promote industry-academia collaboration and effectively transform research achievements into industrial applications.