NCKU
Academy of Innovative Semiconductor and Sustainable Manufacturing

國立成功大學
智慧半導體及永續製造學院

藏行顯光
成就共好
Achieve Securely
Prosper Mutually

國立成功大學 九十週年
90th Anniversary of NCKU

for Taiwan-Slovakia collaborations, *2022.02.09*

Founded under the Act for National Key Fields Industry-Academia Cooperation and Talent Cultivation in August, 2021

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Academy of Innovative Semiconductor and Sustainable Manufacturing

National Cheng Kung University

Tainan, Taiwan

About the Academy

The 1st semiconductor research institute opened among the four approved by the MOE following the passing of the Act for Industry-Academia Cooperative Innovation and Talent Cultivation in 2021

5 graduate degree programs to encompass the full spectrum of technology of the semiconductor industry

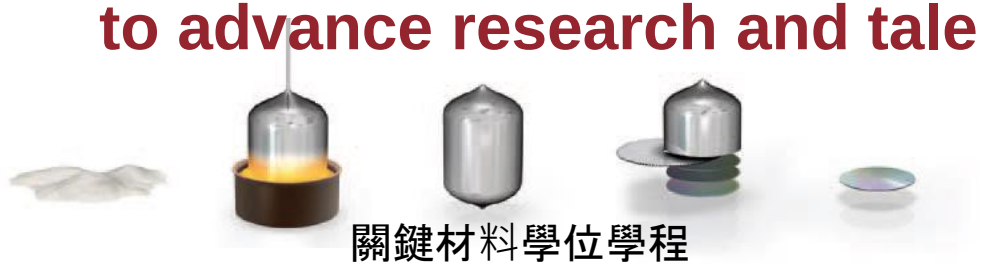
- Integrated Circuit Design 晶片設計學位學程
- Semiconductor Process Technology 半導體製程學位學程
- Semiconductor Packaging and Testing 半導體封測學位學程
- Key Materials 關鍵材料學位學程
- Smart and Sustainable Manufacturing 智能與永續製造學位學程

Core Competency
AI-Centric / Energy-Driven

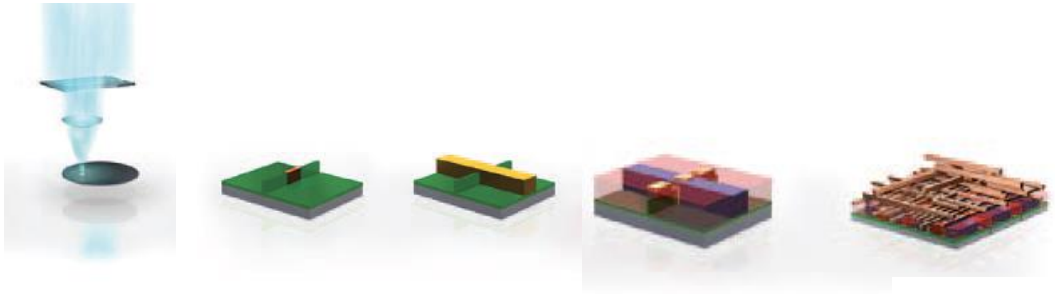
AI / BIG Data / Cloud Computing

Smart Manufacturing / Energy Efficiency / Carbon Net Zero

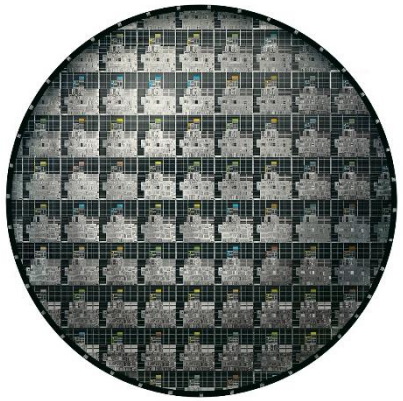
Academic Pillars - for the semiconductor industry supply chains to advance research and talent training

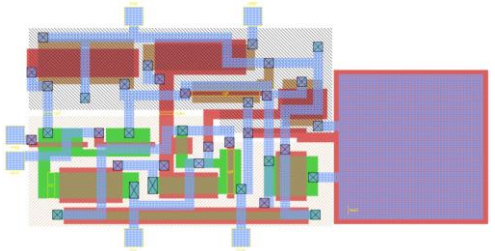


關鍵材料學位學程
Program on Key Materials

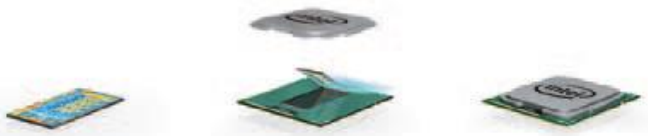


半導體製程學位學程
Program on Semiconductor Process Technology

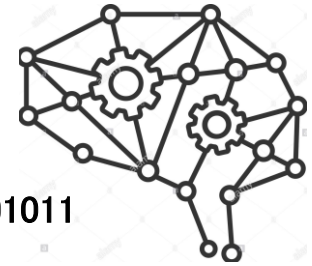




晶片設計學位學程
Program on Integrated Circuit Design



半導體封測學位學程
Program on Semiconductor Packaging and Testing



智能與永續製造學位學程
Program on Smart and Sustainable Manufacturing

Key Features 學程特色

Integrated Circuit Design 晶片設計	Semiconductor Process Technology 半導體製程	Semiconductor Packaging and Testing 半導體封測	Key Materials 關鍵材料	Smart and Sustainable Manufacturing 智能與永續製造
• Smart IoT/AI IC Design • Bio-Electronics/ Sensor IC Design • Memory IC/Computing in Memory • Advanced Mixed-Signal/RF Com-munication/ mm-Wave Sensor IC Design	• Low Power AIoT Device Development • Next-generation Compound Semiconductor • Prospective Development of Technology Node • Memory Device Design	• Packaging design • Packaging Materials/Process • Smart manufacturers on packaging and testing • Sustainable and economy packaging	• Development and application of 2D material • Nano/quantum technologies • Memory devices materials • Functional materials	• Intelligent Manufacturing technology • Additive Manufacturing technology • Sustainable Manufacturing technology • Low-carbon metallurgical technology

Curriculum

Integrated Circuit Design	Semiconductor Process Technology	Semiconductor Packaging and Testing	Key Materials	Smart and Sustainable Manufacturing
• VLSI design automation • Deep learning IC design and acceleration • Low-power VLSI design • Biomedical IC design • Energy harvesting electronics design • Digital video SOC design • Networking IC analysis and design	• Semiconductor processes • Microwave semiconductor devices and integrated circuits • Semiconductor optoelectronics • Nano photonics • Semiconductor memory devices and circuits • Physics of semiconductor devices	• Kinetics of materials • Thin film engineering • Physics of semiconductor materials and devices • Optical spectroscopy of inorganic solids • Viscoelasticity • Polymer processing	• Semiconductor photoelectrochemistry • Artificial photosynthesis • Wide bandgap semiconductor materials and devices • Solid state physics • Nano-biophotonics • Quantum mechanics	• Environmental physics • Solid state thermodynamics • Precision machine design • Materials and devices for sustainable energy • Urban mining and circular economy • Fabrication and applications of lithium batteries

15 top businesses have joined the Industry Alliance of the NCKU AISSM.

Making the NCKU alliance the most dynamic of this kind with the corporate partners representing the different phases of the industry supply chains.

Advanced Semiconductor Engineering, Inc. 日月光半導體製造股份有限公司
China Petrochemical Development Corporation 中國石油化學工業開發股份有限公司
China Steel Corporation (CSC) 中國鋼鐵股份有限公司
Delta Electronics 台達電子工業股份有限公司
Himax Technologies 奇景光電股份有限公司
Jong Shyn Shipbuilding Group 中信造船集團
LCY Chemical Corp. 李長榮化學工業股份有限公司
Macronix 旺宏電子股份有限公司
Powerchip Semiconductor Manufacturing Corp (PSMC) 力晶積成電子製造股份有限公司
Taya Group 大亞集團
Transcom, Inc. 全訊科技股份有限公司
TSMC 台灣積體電路製造股份有限公司
Win Semiconductors 穩懋半導體股份有限公司
Windbond 華邦電子股份有限公司
YAGEO 國巨股份有限公司

Academia-Industry Collaboration 多元化產學合作

Academic Research 學術研究

- Joint Development Projects 產學共同計畫
- Thesis Co-Advising 共同指導論文
- Joint Research Center 共研中心

Corporation Identity 企業認知

- Company Expo 企業說明會
- Promotional Events 專案企劃活動
- On-site Visit 實地參訪

Curriculum & Teaching 課程教學

- Existing Courses and Resources 系(所)現有資源
- Key Modules 重點式課程模組
- Industrial Experts Teaching 業師實務授課

Talent Recruitments 人才招募

- Pre-Hire Seniority 預聘 / 年資
- Short-term intern courses 短期實習課程
- Interview w department heads 部門主管面談

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跨域融合 永續創新

Interdisciplinary Integration, Sustainable Innovation

The Academy integrates scientific knowledge and engineering expertise across disciplines to nurture young talents, and advances next-generation sustainable development for the semiconductor industry.

Thank you for your attention!

Jen-Sue Chen 陳貞夙

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Distinguish Professor, Department of Materials Science and Engineering, NCKU
Chairperson, Division of Materials Engineering, MOST, Taiwan

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