



# **An Overview of Electronic Packaging R&D in China**

**S. W. Ricky Lee**

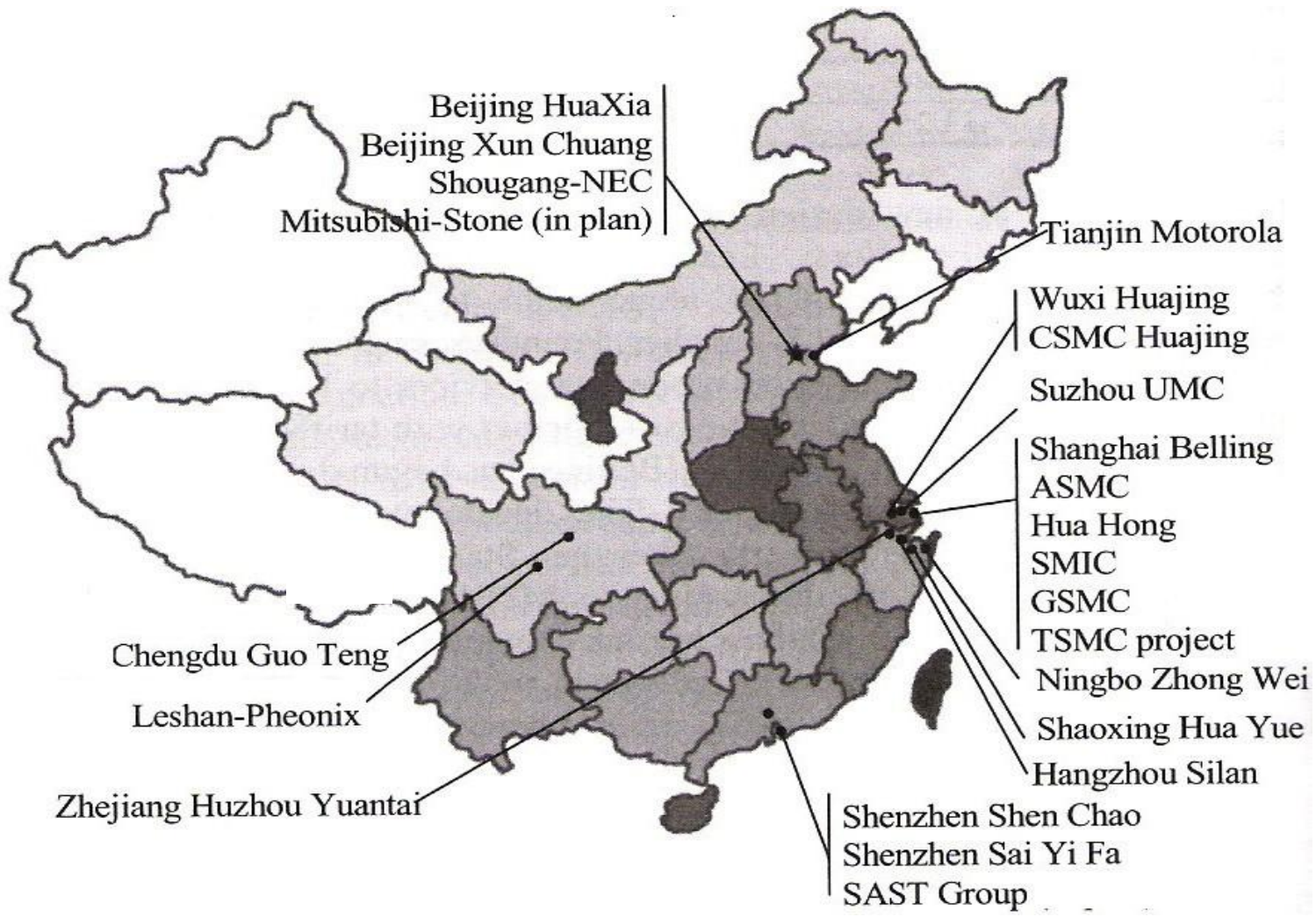
*Center for Advanced Microsystems Packaging (CAMP)  
Hong Kong University of Science and Technology  
Clear Water Bay, Kowloon, Hong Kong*

**61<sup>st</sup> Electronic Components & Technology Conference (ECTC)  
ECTC Panel Session: Spotlight on China  
Orlando, Florida, USA  
May 31, 2011**





# Distribution of Semiconductor Industries in China



Source: CSIA





# Development & Structure of China RoHS



## 中华人民共和国工业和信息化部

Ministry of Industry and Information Technology of the People's Republic of China



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- 电信监管 电信资费 行政事业收费 产业与应用 信息化推进 无线电管理 外事活动 人事人才 反腐倡廉 网站导航 网站地图

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### 电子信息产品污染控制管理办法（第39号）

2006-03-02

中华人民共和国信息产业部  
 中华人民共和国国家发展和改革委员会  
 中华人民共和国商务部  
 中华人民共和国海关总署  
 中华人民共和国国家工商行政管理总局  
 中华人民共和国国家质量监督检验检疫总局  
 中华人民共和国国家环境保护总局  
 （第39号）

《电子信息产品污染控制管理办法》现予公布，自2007年3月1日起施行。

- |                |       |
|----------------|-------|
| 信息产业部部长        | ： 王旭东 |
| 国家发展和改革委员会主任   | ： 马 凯 |
| 商务部部长          | ： 薄熙来 |
| 海关总署署长         | ： 牟新生 |
| 国家工商行政管理总局局长   | ： 王众孚 |
| 国家质量监督检验检疫总局局长 | ： 李长江 |
| 国家环境保护总局局长     | ： 周生贤 |

二〇〇六年二月二十八日

*The Chinese version of RoHS, “Management Methods on the Prevention and Control of Pollution Caused by Electronic Information Products”, has been finalized by the Ministry of Information Industry (MII, 信息产业部) and signed by other Ministries of China (e.g., NDRC, MOFCOM, SEPA, AQSIQ, General Customs, etc.)*





# Packaging Related Research Institutes (I)



Institute of Microelectronics of  
Chinese Academy of Sciences

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Technology Department(SDIT)



ASIC and System Department



Micro-fabrication and Nano Technology  
Department



Microwave Devices and Integrated  
Circuits Department



Communication and multimedia SOC  
Department



Department of Electronics System  
Technology



Electronic design Platform and Electronic  
Common Technology  
Department(ECTD)



Microelectronic Equipment Technology  
Department



System in Package Department



Integrated Circuit Advanced Process  
Center



Radio Frequency Integrated Circuit  
Department

<http://www.ime.cas.cn/>



# Packaging Related Research Institutes (II)



Shanghai Institute of Microsystem  
And Information Technology  
Chinese Academy of Sciences



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## Research

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### Research Divisions

State key Laboratory of Transducer Technology

State Key Laboratory of Functional Materials for Informatics

Key Laboratory of Terahertz Technology, CAS

Wireless Sensor Networks Laboratory

Internet of Things System Technology Laboratory

Laboratory of Broadband Wireless Technology

New Energy Technology Center

Automobile Electrical Engineering Center (preparatory)

<http://www.sim.cas.cn/>



中国科学院上海微系统与信息技术研究所  
Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Sciences



# Packaging Related Research Institutes (III)



## HK Applied Science & Technology Research Institute (ASTRI)

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IC Design

Material & Packaging Technologies

Display Systems

LED Lighting

Advanced Packaging Technologies

Photonic Components

Device Fabrications

New Developments

Bio-Medical Electronics



Home > Technologies > Material & Packaging Technologies

### Material & Packaging Technologies Group

Expressions of Interest | Contact Our Expert | Print

Since its establishment in 2005, the Material & Packaging Technologies (MPT) Group has been focusing on developing high-value, next-generation technologies and products in the form of devices, components, modules and system integration that are differentiated mainly by material and packaging technologies.

MPT has launched five technology initiatives:

- [Display Systems](#)
- [LED Lighting](#)
- [Advanced Packaging Technologies](#)
- [Photonic Components](#)
- [Device Fabrications](#)

Building up material and packaging technology platforms will continuously spawn new and competitive applications in the long term. The goal of MPT is to lay foundation for Hong Kong and the Pearl River Delta to become a major centre for designing and manufacturing the next-generation devices and key components for the worldwide ICT industries.



<http://www.astri.org/>





# Electronic Packaging Technology Majors in China



## Microjoining Laboratory Micro Welding and Joining, Electronics Packaging, Interconnection Harbin Institute of Technology

<b>研究内容</b>	<b>电子封装与组装技术</b>	<b>精密焊接</b>
<b>研究人员</b>	-表面组装激光软钎焊技术	-复杂精密构件焊接变形控制及工装优化设计
<b>研究设备</b>	-SMT焊点形态预测和设计	-铝合金表面活化钎焊的基础研究
<b>论文一览</b>	-无钎剂免清洗软钎焊技术[国家发明专利]	-室温连接技术
<b>研究生</b>	-微组装焊点的可靠性	-功能构件的精密焊接技术
<b>教学资料</b>	-连接界面行为分析和连接材料设计的量子学方法	-激光精密焊接
<b>藏书一览</b>	-封装与组装的工艺技术研究	-激光打孔与激光切割
<b>相关连接</b>	-多芯片模块封装技术	-薄膜、箔等的精密电阻焊
<b>技术资料</b>	-低温钎料的设计与低温连接技术	-焊接结构的应力与变形的有限元分析
<b>FTP服务</b>	-光电子封装技术；半导体LED封装及照明灯具的结构	-特殊部件的精密焊接技术
<b>哈工大</b>	-面阵封装技术	-陶瓷封接技术
<b>财务查询</b>	-SMT焊点的缺陷检测和防止	
<b>图书馆</b>	-互连界面的组织演变	
<b>哈工大BBS</b>	-无铅钎料合金基础研究	
<b>工大新闻</b>	-无铅焊接设备关键技术	欢迎相关专业的毕业生报考本方向研究生：
<b>邮件服务</b>	-微系统封装	硕士论文：材料加工工程
<b>English</b>	-混合集成电路封装	博士论文：1、材料科学与工程；2、电子科学与技术
<b>首页</b>	-功率器件封装	
	-微传感器制造技术；微磁头组装键合新技术[新技术]	
	-锡球制造与熔滴凸点制作技术[国家发明专利]	
	[研究项目]	

Other University with EPT Majors in China --  
 Beijing Institute of Technology  
 Huazhong University of Science & Technology  
 Guilin University of Electronics Technology

**EPT** 教育部批准哈尔滨工业大学成立电子封装技术本科专业，2008年正式开始招生。[专业介绍]

Source: HIT







# ICEPT-HDP Conferences



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**2011 International Conference on Electronic Packaging Technology & High Density Packaging(ICEPT-HDP2011)**

August 8-11, 2011, Shanghai, China

The 12th International Conference on Electronic Packaging Technology & High Density Packaging (ICEPT-HDP 2011) will be held in Shanghai, China, from August 08 to 11, 2011. The ICEPT-HDP 2011 is organized by Electronic Manufacturing and Packaging Technology Society (EMPT) of Chinese Institute of Electronics (CIE) and co-organized by Shanghai University. The conference has received strong support from IEEE CPMT and active involvement from IMPAPS, ASME and iNEMI.

ICEPT-HDP 2011 is a four-day event, featuring technical sessions, professional development courses/forums, exhibition, and social networking activities. It aims to cover the latest technological developments in electronic packaging, manufacturing and packaging equipment, and provide opportunities to explore the trends of research and development, as well as business in China.

**Organizing Institutions:**  
**Tsinghua University**  
**Fudan University**  
**Shanghai University**  
**Harbin Institute of Technology**

**Huazhong University of Science & Technology**  
**Shanghai Jiao Tong University**  
**Xidian University**

**Conference Locations:**  
**Beijing**  
**Shanghai**  
**Shenzhen**  
**Xian**





# Universities with Active Research Activities (II)




香港中文大學  
The Chinese University of Hong Kong




香港科技大學  
THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY



香港城市大學  
City University of Hong Kong



THE HONG KONG POLYTECHNIC UNIVERSITY  
香港理工大學



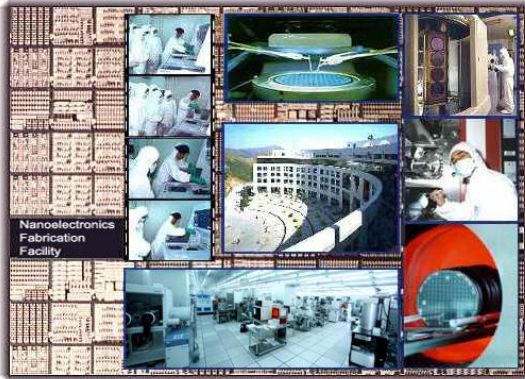


# Packaging Related Facilities at HKUST

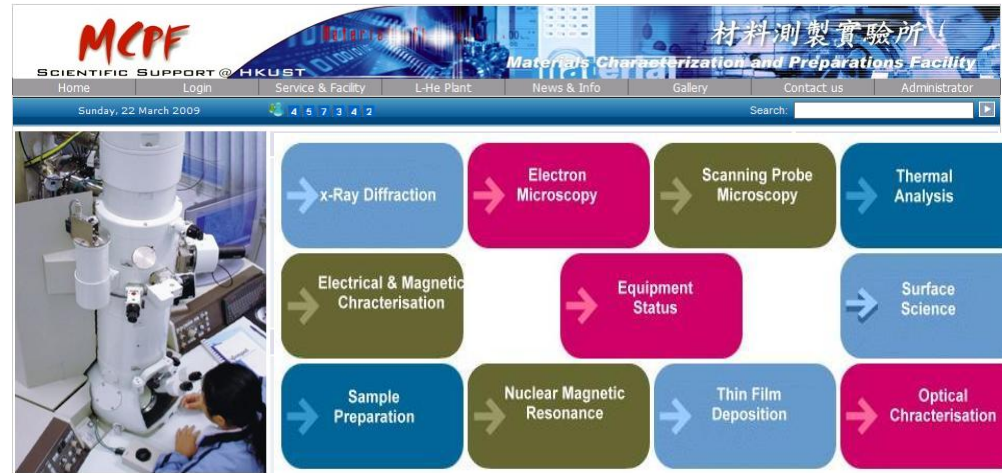


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Nano-Fabrication Facility



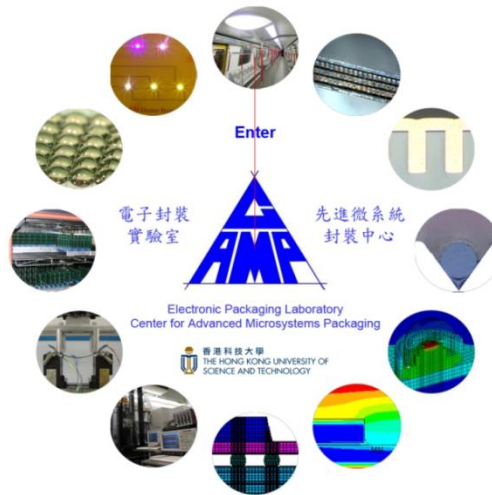
Material Characterization & Preparation Facility

## Semiconductor Product Analysis and Design Enhancement (SPADE) Center

- Focused Ion Beam (FIB)
- Emission Microscope (EMMI)
- ESD Tester
- Backside Preparation System (Chip UnZip)
- Laser Cutting System
- Probe Station
- Active Probe
- Liquid Crystal Thermal Analysis
- Reactive Ion Etch (RIE)
- Stereomicroscope
- Confocal Microscope



SPADE Center



Center for Advanced Microsystems Packaging (CAMP)



## 香港科大深圳电子材料与封装实验室 HKUST Shenzhen Electronic Materials and Packaging Laboratory



佛山市香港科技大学LED-FPD工程技术研究开发中心  
HKUST LED-FPD Technology R&D Center at Foshan





# Roles of Tertiary Institutions



**RESEARCH &  
KNOWLEDGE CREATION**

**EDUCATION & HUMAN  
RESOURCE DEVELOPMENT**



**TECH TRANSFER,  
SPIN-OFF COMPANIES, &  
ECONOMIC DEVELOPMENT**

**SERVICE TO COMMUNITY  
& SOCIETY**

