

## MEMO

致 To : 各會員 All members 編號 NO.: M-12-002  
 由 From : 香港綫路板協會 HKPCA 日期 Date: 2012 年 1 月 4 日

### PCB 基礎培訓課程 綫路板孔導電 – 金屬化與電鍍

### PCB Basic Training Course PCB Processing Technology – Metallization and Electroplating

課題 Course Title:	PCB Processing III (PCB basic module 4) PCB 製造過程 III (PCB 基本單元 4)
主辦單位 Organizer:	香港綫路板協會，並由香港理工大學綫路板科技開發中心主理 HKPCA, and delivered by PCB Technology Centre of Hong Kong Polytechnic University
日期 Date:	2012 年 2 月 17 日 / Feb. 17, 2012
時間 Time:	下午 14:00-17:00 p.m.
地點 Venue:	香港九龍觀塘塘成業街 7 號寧晉中心 2 樓 B 室 (香港綫路板協會香港辦公室) Unit B, 22/F., Legend Tower, 7 Shing Yip Street, Kwun Tong, Kowloon, Hong Kong (HKPCA Hong Kong office)
培訓目的 Purpose:	瞭解基本綫路板的金屬化和電鍍工藝 Understanding of the basic PCB metallization and electroplating technology
培訓對象 Target Audience:	PCB 工藝工程師和相關管理人員 PCB process engineers and related management
語言 Language:	廣東話教授，英文講義 / Cantonese with English Handouts
課程內容 Content:	<p>電鍍工藝已經在綫路板生產上應用了幾十年，要了解綫路板產業，電鍍工藝就是首要認識的課題。雙面板或多層板在完成鑽孔後，即會進行鍍通孔工藝，其目的是把一層導電物質塗在孔壁上之，進行金屬化，及以後的電鍍銅製程。</p> <p>本課程從綫路板材料出發，結合設備、電鍍工藝的理論和特點。課程亦會討論綫路板客戶對該工藝的要求。在參與本課程後聽眾能對此等工藝有深刻的認識。</p> <p>Plating technology has been applied in PCB industry for decades. It is the first basic course for everyone who would learn more about PCB industry. Upon drilled, double-sided or multilayer printed circuit boards will proceed for metallization. The purpose of this process is to make the hole wall of a drill hole, which is an insulator in nature, conductive. The conductive surface will then be taken for subsequent electroplating process.</p> <p>This course starts with the material aspects of PCB, together with the equipment and plating processing technologies. Desmear, metallization and plating theory, as well as their functional requirements will be explained in details. The participants can be benefited by acquiring a comprehensive understanding on these processes and their impacts to the PCB quality.</p>

講師 Speaker:	譚少濂先生 Mr. James Tam
講師信息 Speaker Profile:	<p>譚少濂先生是香港理工大學綫路板科技開發中心的經理，他已從事電子及綫路板行業達 15 年。在加入綫路板科技開發中心以前，譚先生曾擔當顧問工作，為各基板及電子產品製造商提供顧問服務。他於綫路板科技開發中心工作的六年間，該中心已成功完成了 8 個與綫路板相關的研究項目/顧問服務，所涉及的金額高達一千多萬；其中有關的項目成果都有利於本地生產工業。譚先生在香港城市大學獲得了材料科學與工程管理的碩士學位。</p> <p>Mr. James Tam is the manager of the PCB Technology Center in the Hong Kong Polytechnic University. He has been working in PCB and electronic industry for 15 years. Before joining the PCB Technology Center, he has worked as a consultant serving various substrate and electronic manufacturers. During his six years of service in PCB Technology Center, the center has successfully implemented eight PCB-related research / consultancy projects, with deliverables directly beneficial to local industries. Mr. Tam obtained his master degree in Material Science and Engineering Management from City University of Hong Kong.</p>
截止日期 Deadline:	<b>2012 年 2 月 10 日 / February 10, 2012</b>
費用 Fee:	HKPCA 會員價：HKD450；非會員價：HKD600 HKPCA Member: HKD450; Non-member: HKD600
付款方式 Payment	<p>1) <u>劃線支票</u> (抬頭請填寫“香港綫路板協會有限公司”) 郵寄至本會; By Cheque (Please mail us the cross cheque payable to : “Hong Kong Printed Circuit Association Ltd” 或 OR 2) <u>銀行入數</u> (本會匯豐銀行帳號: 469-089601-838) 請將銀行收據傳真至 (852)21559099 為實。 Bank-in (Please bank-in the payment to “The Hongkong and Shanghai Banking Corporation Limited” A/C #: 469-089601-838 and fax the bank-in slip to (852)21559099 in order to complete the process.) *為確保訂座，請於截止日期前付款，逾期作取消論 In order to secure the reservation, please settle the payment by the deadline</p>
查詢 Enquiry:	<p>香港辦事處:- 黃小姐 Manda Wong, Tel: (852) 21555123, Email: <a href="mailto:mandawong@hkpca.org">mandawong@hkpca.org</a> 深圳代表處:- 吳小姐 Lisa Wu; Tel: (86) 755 8624 0033; Email: <a href="mailto:lisawu@hkpca.org">lisawu@hkpca.org</a> 袁小姐 Susan Yuan; Tel: (86) 755 8624 1673; Email: <a href="mailto:susanyuan@hkpca.org">susanyuan@hkpca.org</a></p>

# PCB 基礎培訓課程

## 綫路板工序 – 金屬化與電鍍

# PCB Basic Training Course

## PCB Processing – Metallization and Electroplating

### 課程大綱 Outline :

#### 1. Smear Removal 除膠

##### 1.1 Introduction 介紹

###### 1.1.1 Source of Smear 膠渣來源

###### 1.1.2 Material of Smear 膠渣物料性質

##### 1.2 Criteria for Selection of Smear Removal Process 選用不同除膠方法的準則

##### 1.3 Smear Removal Methods 除膠方法

###### 1.1.1 Chemical 化學除膠

###### 1.1.2 Plasma 熱電漿除膠

##### 1.4 Common defects associated with Smear Removal 除膠工序的常見壞品

#### 2. Metallization 金屬化

##### 2.1 Theoretical Background 理論背景

##### 2.2 Functional requirement 功能要求

##### 2.3 Different types of metallization 不同類型的金屬化工序

###### 2.3.1 Electro-less Copper plating 無電沉銅

###### 2.3.2 Direct Metallization 直接金屬化

###### 2.3.3 Black Hole 黑孔

##### 2.4 Comparison of different types of metallization 不同金屬化流程比較

##### 2.5 Reliability and potential defects associated with metallization

由金屬化流程所引發的壞品及可靠性問題

#### 3. Electroplating (Copper Plating) 電鍍(鍍銅)

##### 3.1 Theoretical Background 理論背景

##### 3.2 Functional requirement 功能要求

##### 3.3 Process flow 流程

##### 3.4 Equipment and Accessories 儀器及附件

##### 3.5 Common defects associated with Electroplating 電鍍工序的常見壞品

## \*\* 報名表回條 \*\*

PCB 基礎培訓課程  
綫路板工序 – 金屬化與電鍍  
PCB Basic Training Course  
PCB Processing – Metallization and Electroplating

2012 年 2 月 17 日 香港

請於 **2 月 10 日** 前回覆  
Please reply by **February 10**  
傳真 Fax : 852-21559099  
電郵 Email: mandawong@hkpca.org

- 本人/吾等希望參加上述培訓課程  
I / We would like to join the above said Training Course
- 本人/本公司為 HKPCA 會員，會員編號：  
I / We are HKPCA member, Member No: \_\_\_\_\_。

**參加者詳情 PARTICIPANT DETAILS** (必須填寫 have to be filled):

	姓名 Name		職位 Job Title	學歷 Education Qualification (請選擇一項 Please select one)		
	English	中文		預科或以下 Matriculation or below	大專或大學 College or University	碩士或博士 Master or Ph.D
1						
2						
3						
4						

**費用 FEE** 參加人數共 \_\_\_\_\_ 人 X 每人港幣 \_\_\_\_\_ 合共總額港幣 \_\_\_\_\_  
No of Participants \_\_\_\_\_ Person X HKD \_\_\_\_\_ = Total in HKD \_\_\_\_\_

**備註 Remark:**

- 名額:30 位(以繳款先後順序為準，先繳先得，額滿即止)  
Maximum attendee: 30 (on first come first served basis, order subject to payment settlement)
- 請於截止日期前繳費，否則作棄權論 (不接受現場繳費)  
Please settle payment by the deadline (On-site payment is not accepted).
- 會員將獲優先處理 Members are served with priority.

**公司資料 COMPANY DETAILS**

姓名 Name: \_\_\_\_\_ 職位 Title: \_\_\_\_\_  
公司名稱 Company: \_\_\_\_\_  
公司地址 Address: \_\_\_\_\_  
聯絡人 Contact Person: \_\_\_\_\_ 電話 Tel: \_\_\_\_\_  
電郵 Email: \_\_\_\_\_ 傳真 Fax: \_\_\_\_\_

**付款方式 PAYMENT METHOD**

(為確保訂座，請於截止日期前付款，逾期作取消論):

- (In order to secure the reservation, please settle the payment by the deadline)
- 劃線支票 (抬頭請填寫“香港綫路板協會有限公司”) 郵寄至本會; 或  
By Cheque (Please mail us the cross cheque payable to : “Hong Kong Printed Circuit Association Ltd” OR
  - 銀行入數 (本會匯豐銀行帳號: 469-089601-838) 請將銀行收據傳真至 852-21559099 為實。  
Bank-in (Please bank-in the payment to “The Hongkong and Shanghai Banking Corporation Limited”  
A/C #: 469-089601-838 and fax the bank slip to 852-21559099 in order to complete the process.)

收據只會在會員要求下發出。如需要收據，請在方格內填上‘X’號

Official Receipt will only be issued by request. If Official Receipt is needed, please make a cross “X” at