

## Monday 1st September 2008

### Short Course Descriptions & Tutor Credentials

#### Morning Short Courses

- **Electrical Analysis of Electronics Packaging - M Caggiano**

**Description**

Electrical circuit analysis and modeling of IC packages are necessary to accurately simulate the response of the assembled device. While models of discrete components are readily available from manufacturers, models of integrated circuit packages containing reactive parasitics are much harder to obtain. This course will provide the concepts of analyzing and electrically modeling the IC package and investigating the impact these effects have on signal integrity.

**For Whom Intended**

This course will be beneficial to engineers, scientists and managers involved with the IC package design. It will provide a basic understanding of the electrical effects the IC package has on the performance of the circuit contained within. Circuit designers will also benefit from this course since the knowledge gained will allow them to design circuits considering the effects of the IC package.

**Tutor Credentials**

Michael Caggiano, Professor Emeritus from Rutgers University, NJ, USA, received his Ph.D. from UCLA in 1979. He is a former member of the technical staff of Bell Laboratories, Murray Hill, NJ where he was the subject matter expert of electrical packaging of high performance and microwave IC's.

- **Electrically Conductive Adhesives - J Morris**

**Description:**

Introduction to Electrically Conductive Adhesives. Anisotropic Conductive Adhesives and Films. Isotropic Conductive Adhesives: Basic material properties, fabrication, test techniques and pitfalls; Electrical conduction, modeling, thermal properties; Reliability performance, and physical interpretation, Processing for reliability

**For Whom Intended**

The course will be beneficial to electrical, mechanical, and materials engineers alike, or any one with an interest in electronic device design, fabrication, assembly, or application. The level will be accessible to students and graduates in any of these areas, or the physical sciences.

**Tutor Credentials**

Prof. James Morris, Portland State University (USA). BSc, MSc Physics, NZ, Ph.D. Electrical Engineering, Canada. Registered Professional Engineer (New York), IEEE Fellow, 40+ years experience teaching and research (nanoelectronics and packaging)

- **TSV and Microvias for HD Interconnect - R Lee**

- **Thermal Stresses and Solutions in Electronics & Photonics - E. Suhir**

**Description**

Thermal Stress Problems, Modeling, Theories and Models. Assemblies, Joints, Thin films, Nano-systems. Analytical vs FEM. Design solutions. Thermal matching. Accelerated life-testing.

**For Whom Intended**

Engineers, scientists, technical managers, students and professors involved in the mechanical behaviour, performance & reliability of electronics and photonics materials, assemblies, packages and systems subjected to thermal loading

**Tutor Credentials**

Dr. Suhir is on the faculty of the Electrical Engineering Department, University of California at Santa Cruz. He has authored about 250 technical publications (papers, book chapters, books, patents), including monographs "Structural Analysis of Microelectronic and Fiber Optic Systems".

#### Afternoon Short Courses

- **Organic and Large Area Electronics - K Bock**

**Description**

Cost requirements of organic electronics mean that manufacturing is very cost-effective. Polytronics can be based on a hybrid approach a so-called "most-polymer" and "partially-printed" approach. Polymer-based sensors and actuators are developed and also so called Plastic-MEMS devices incorporating mechanical, fluidic and optical components are possibly available within the next years. In fact "Polytronics" could be a kind of merge where finally elements of all these technologies will open a new flexible large area hetero-integration technology platform for electronic multi-functional systems towards the vision of "Smart Plastics". Content includes: Micro structuring on foil substrates, Materials & processing, Device and circuits, Multi-functional hetero-integration on foil substrates, Applications.

### **For Whom Intended**

Those interested in organic electronics and materials, organic electronic devices and circuits, flexible emerging and advanced packaging technologies, and cost-efficient manufacturing on foil substrates

### **Tutor Credentials**

Prof. Dr.-Ing. Karlheinz Bock. University Berlin chair and Deputy Director Fraunhofer IZM. Head of Polytronic Systems Department at the Institute for Reliability and Microintegration IZM in Munich, working on R&D of thin and flexible systems technologies and chemical and biological sensors.

- ***Failure Modes and Effects of failures in MEMS - M. Desmulliez***

- ***Advanced Substrates in the Era of More Moore and More than Moore - Henry Utsunomiya***

### **Description**

Industry landscape; Technology supply chain matching -- assembly technology, substrate technology, system technology; Market dynamics driving package and substrate development; Technology shift from CPU to mobile applications; Maturing of buildup substrate technology; Package miniaturization and functional integration representing 'More Moore' and 'More than Moore'; Substrates for fine-pitch assembly applications; Embedded active/passive substrates; Examples/illustrations of advanced substrate applications in servers, hand-helds, and high-end servers and communication equipments: PoP (Package on Package), EAD (Embedded Active Devices), Si interposers, WLP (Wafer Level Packages), etc.

### **For Whom Intended**

The course is designed for application designers and developers, package developers as well as substrate development and manufacturing engineers to understand the market dynamics driving package development trends and to provide a direction for future package and substrate requirements.

### **Tutor Credentials**

Henry Utsunomiya, Interconnection Technologies, Inc. is highly experienced in PBGA, MCM-L and other IC packaging substrate technologies. His 25 year career includes more than 10 years of involvement in international electronics/semiconductor standards and forecasting committee activity with such industry association as IPC, SIA, EIAJ and JIEP.

- ***Thermal Modelling and Characterisation of Electronic Systems - P Rodgers***

### **Description**

Computational Fluid Dynamics permits rapid generation and assessment of electronic thermal designs. Many factors impact which on predictive accuracy are described. This course covers the application of both experimental and numerical methods to optimize thermal designs.

### **For whom Intended**

Engineers, managers and scientists involved in the thermal management, thermo-mechanical issues or reliability of electronics systems. It is aimed at participants with varying expertise levels in thermal management, from novice to advanced. The course aims to give a balanced expectation on the use of CFD.

### **Tutor Credentials**

Dr. Peter Rodgers is Associate Professor of Mechanical Engineering at the Petroleum Institute, UAE. He is a specialist in electronics thermal management with over fifteen years industry and research experience and has published extensively.

- ***Optoelectronic Modules and Components - T. Wipiejewski***

### **Description**

Comprehensive overview of optical components and modules for state-of-the-art systems from long-haul to short distance. LEDs, very low cost optical links and laser diodes for high speed optical communication and datacom interconnects. Advanced modulator technology. PIN photodiodes, APDs, MSM photodetectors. Physical principles, fabrication, packaging of photonics devices. Advantages and limitations of photonics components for the specific applications. Optical modules for datacom and fibre optic transceivers based on plastic moulding technology for short distance interconnects. Future developments beyond 10Gbit/s, wavelength tunability, functional integration, and low cost plastic optical fiber technology.

### **For Whom Intended**

Engineers and technical managers who want to gain a fundamental understanding of the characteristics of the various components and modules used in modern and future optical transmission systems.

### **Tutor Credentials**

Dr Torsten Wipiejewski, "Summa cum laude" Ph.D. COO Firecomms Ltd, Ireland, . Responsible for Firecomms' production and product development of fibre-optic transceiver and VCSEL products. Torsten also chaired the Optoelectronics Chip-Level Roadmap development for iNEMI in 2004.

---

## Welcome Reception

[www.estc.biz](http://www.estc.biz)