Corrosion in Microelectronics and Semiconductor Industry (2 days)

Registration Form

Photocopies of this form may be used for registrations.
You can also register online at www.corrosionclinic.com

Please register the following person(s) for the above course (please TYPE or PRINT clearly):

1. Dr/Mr/Ms _____
   Designation _____

2. Dr/Mr/Ms _____
   Designation _____

3. Dr/Mr/Ms _____
   Designation _____

*delete where inappropriate

Enclosed is a cheque / bank draft No. _____ for S$ _____(payable to "**WebCorr Corrosion Consulting Services"**) being Registration Fee for the above person(s).

Organization _____
Contact Person _____
Contact Dept _____
Telephone _____ Fax _____
Email _____

Crossed cheques should be made payable to "**WebCorr Corrosion Consulting Services"** and mailed together with the registration form to:

WebCorr Corrosion Consulting Services
Toa Payoh Central,, PO Box 225,
Singapore 913108
Tel: (65) 64916456 Mobile: (65) 97110759
Fax: (65) 64916456
Email: webcorr@corrosionclinic.com
http://www.corrosionclinic.com

Course Details

Date: TBA
Time: 9:00 am to 5:00 pm
Venue: TBA
Course Fee: S$1495 (GST not applicable)
Closing Date: 2 weeks before course date
Discount:
Group: (3 or more people): 10%
Early-bird: N% **if paid** "N" months before the course commencing date

Withdrawal/Refund Policy:

Withdrawal or replacement should be conveyed to the organizer in writing (email or fax). An administration charge of 50% of the course fee will be levied if the withdrawal notice is received less than 7 working days before the course commencing date. No refund will be made for withdrawal notice received 3 working days and less.

Certificates:

Certificate of attendance will be given to participants with at least 75% attendance of the course.

Cancellation:

WebCorr reserves the right to cancel the course and fully refund the participants should unforeseen circumstances necessitate it.

Corrosion in Microelectronics and Semiconductor Industry

(2 days)

Conducted by
Dr. Qiu Jianhai *BEng PhD CEng MIM FICorr*
NACE Certified Corrosion Specialist

Date
TBA

Venue
TBA

Organized by:

WebCorr CORROSION CONSULTING SERVICES

Course Overview:

Corrosion is responsible for more than 50% of microelectronic device failures. It is dependent on the package type, electronic materials, fabrication and assembly processes, and environmental conditions (such as humidity, contaminants, temperature, stress and electrical bias etc.) This course thoroughly and systematically covers the causes and prevention of corrosion in microelectronics and semiconductor industry.

This corrosion short course can be taken as in-house training course, online course and distance learning course worldwide. It can also be customized to meet the specific needs of your organization.

Course Contents

1 Fundamentals of corrosion
- 1.1 Corrosion: what it is
- 1.2 Impact of corrosion on society
- 1.3 Why do metals corrode
- 1.4 Basic concepts in corrosion
- 1.5 Different forms of corrosion
- 1.6 Corrosion in atmosphere

2 Corrosion in Microelectronics
- 2.1 Characteristics of corrosion
  - 2.1.1 Properties of electronic materials
  - 2.1.2 Failure modes, defects, mechanisms, and causes
  - 2.1.3 Design and packaging
  - 2.1.4 The environment
- 2.2 Common sources of corrosion
- 2.3 Common forms of corrosion

3 Corrosion in the assembly of semi-conductor Integrated Circuits
- 3.1 Major factors causing corrosion
- 3.2 Chip corrosion
- 3.3 Oxidation of tin and tin lead alloys (solders)
- 3.4 Mechanism of tarnished leads
- 3.5 Controlling tarnished leads at the assembly
- 3.6 Purple plague, white plague, red plague

4 Corrosion in semiconductor wafer fabrication
- 4.1 Corrosion during fabrication
  - 4.1.1 Metallization and chlorine-induced corrosion
  - 4.1.2 Corrosion prior to the metal lead etch process
  - 4.1.3 Corrosion issues related to batch metal-etch systems
  - 4.1.4 Corrosion issues related to single-wafer metal-etch systems
  - 4.1.5 Solvent cleanup after metal etch
- 4.2 Corrosion due to environmental effects

5 Corrosion control and prevention
- 5.1 materials selection
- 5.2 design
- 5.3 use of packaging materials
- 5.4 control of environment

6 Corrosion Test
- 6.1 Accelerated tests
- 6.2 AC impedance
- 6.3 Galvanic effects
- 6.4 Corrosion rate determination
- 6.5 Service life prediction

7 Exercises and Case Studies

Who Should Attend

This course has been structured in such a way that it is particularly suited for the managers, technologists, engineers and QA/QC personnel who are concerned with corrosion failures in microelectronics & semiconductor industry.

Course Lecturer

Dr. Qiu Jianhai *BEng PhD CEng MIM FICorr*

Dr Qiu obtained his BEng and PhD degrees both in the field of corrosion. He has 28 years of industry, university teaching, research and consulting experience in the field of corrosion and its prevention. He has been working closely with both local and overseas companies and has been an active consultant to governmental agencies, multinational companies and private organizations on corrosion and materials related issues such as corrosion design review, materials selection and life prediction, corrosion inspection and condition assessment, plant process optimization, corrosion training, corrosion testing and monitoring, trouble-shooting and corrosion failure analysis. Dr. Qiu is also experienced in providing expert witness and assistance in litigation and arbitration matters related to corrosion and materials. Dr. Qiu was an invited contributing author to the latest edition of the world renowned ASM Handbook Vol.13C Corrosion: Environments and Industries. His biographical profile was included in the 7th edition of Marquis Who's Who in Science and Engineering.

Dr. Qiu is a NACE certified Corrosion Specialist (USA), a Chartered Engineer registered with the Engineering Council (UK), a Fellow of the Institute of Corrosion (UK) and a professional member of the Institute of Materials, Minerals and Mining (UK). Dr. Qiu is the Singapore representative in the International Corrosion Council (ICC).