Corrosion in Microelectronics

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: 14 October 2008
Time: 9:00 am to 5:00 pm
Venue: TBA
Course Fee: S$595 (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

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

Date
14 October 2008

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.

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 Terminology and Conventions
- 1.1 corrosion, unit of measurement for corrosion
- 1.2 pH, potential, potential-pH diagram
- 1.3 passivation, anode, cathode, corrosion cell
- 1.4 EMF series, active metal, noble metal, galvanic series etc..

2 Why & How does corrosion occur in microelectronics?
- 2.1 Corrosion in classical systems
  - 2.1.1 the reaction of a metal with its environment
  - 2.1.2 the electrochemical nature of corrosion
  - 2.1.3 the mixed potential theory
  - 2.1.4 polarisation and corrosion rate
- 2.2 Characteristics of corrosion in microelectronics
- 2.3 Common sources of corrosion in microelectronics
- 2.4 Common forms of corrosion in microelectronics
  - 2.4.1 uniform corrosion
  - 2.4.2 galvanic corrosion
  - 2.4.3 creep corrosion
  - 2.4.4 dendrite growth
  - 2.4.5 fretting
  - 2.4.6 stress corrosion cracking
  - 2.4.7 hydrogen embrittlement
  - 2.4.8 whisker growth

3 How to control and prevent corrosion in microelectronics
- 3.1 materials selection in microelectronics
- 3.2 design
- 3.3 use of packaging materials in microelectronics
- 3.4 control of environment in microelectronics

4 Testing techniques in microelectronics
- 4.1 accelerated tests
- 4.2 AC impedance
- 4.3 galvanic effects
- 4.4 corrosion rate determination
- 4.5 service life prediction

Who Should Attend

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

Course Lecturer

Dr. Qiu Jianhai *BEng PhD CEng MIM FICorr*

Dr Qiu has 28 years industrial, university teaching, research and consulting experience in the field of corrosion. 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 condition assessment, process optimization, quality control, corrosion testing and monitoring, life predictions, 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. He has authored about 120 technical papers and reports. Dr. Qiu was an invited contributing author to the latest edition of 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) and a Fellow Member of the Institute of Corrosion (UK). He is a Chartered Engineer registered with the Engineering Council (UK), a professional member of the Institute of Materials, Minerals and Mining (UK), and a member of ASM International (USA). He is the Vice Chairman of the Corrosion Association of Singapore, and the Singapore representative in the International Corrosion Council (ICC).