

Emerging Corrosion Control  
Technologies for the Repair and  
Rehabilitation of Concrete Structures

**Registration Form**

Photocopies of this form may be used for registrations.  
You can also register online at [www.corrosionclinic.com](http://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](mailto:webcorr@corrosionclinic.com)

<http://www.corrosionclinic.com>

**Course Details**

**Date:** TBA  
**Time:** 9:00 am to 5:00 pm  
**Venue:** Spring Singapore  
**Course Fee:** S\$795 (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.

**Emerging Corrosion Control  
Technologies for the Repair and  
Rehabilitation of Concrete  
Structures**

*Conducted by:*

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

*Date:*  
**TBA**

*Venue:*  
**Spring Singapore  
2 Bukit Merah Central  
Singapore 159835**

*Organized by:*



## Course Overview:

Technology always advances faster than the development of codes, specifications, and standards. Recent innovations in materials and corrosion control technologies have enabled designers and architects to meet performance-based specifications at lower life cycle cost. This one-day corrosion short course focuses on use of the state-of-the-art emerging technologies for repair and rehabilitation of bridges and other concrete structures. These technologies include: conductive concrete, press-on zinc hydrogel anode CP system, snap-on zinc mesh anode CP system, electrochemical chloride extraction, electrochemical realkalisation, cathodic protection, duplex stainless steels and alloys reinforcements. Most of these emerging technologies are also increasingly used for corrosion prevention in new concrete structures. Application examples and case studies will be presented to demonstrate the potentials of these promising technologies in the new millennium.

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. Innovative Cathodic Protection Systems for Concrete Repair and Rehabilitation
  - 1.1 Sacrificial anode CP
  - 1.2 Pressure-sensitive Zinc-Hydrogel anode
  - 1.3 Snap-on zinc mesh anode CP system
  - 1.4 Impressed current CP
  - 1.5 Anode design
  - 1.6 Electrodes selection
  - 1.8 Installation

- 1.9 Life expectancy
- 1.10 Case study
- 1.11 Applications
2. Chloride Extraction For Concrete Repair and Rehabilitation
  - 2.1 Principles of chloride extraction
  - 2.2 System setup and operating parameters
  - 2.3 Assessment of effectiveness
  - 2.4 Applications
3. Electrochemical Realkalisation for Concrete Repair and Rehabilitation
  - 3.1 Principles of electrochemical realkalisation
  - 3.2 System setup and operating parameters
  - 3.3 Assessment of effectiveness
  - 3.4 Applications
4. Conductive Concrete
  - 4.1 The nature of conductive concrete
  - 4.2 Conductive concrete in cathodic protection
  - 4.3 Case studies
  - 4.4 Applications
5. Stainless Steels and Alloys Reinforcements
  - 5.1 The fundamental difference between black rebar and stainless steel rebar
  - 5.2 Type of stainless steels and alloys
  - 5.3 Mechanical properties of stainless steels and alloys
  - 5.4 Corrosion resistance of stainless steels and alloys
  - 5.5 Cost comparison
  - 5.6 Case studies
  - 5.7 Applications
6. Ranking of the Emerging Technologies for Corrosion Control in Concrete Structures

## Who Should Attend

This course has been structured in such a way that it is particularly suited for the architects, designers, technologists, engineers, technical service and maintenance personnel who deal

with design, repair and rehabilitation of concrete structures.

## 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 27 years of industry, university teaching, research and consulting experience in areas 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 has recently completed the design of a cathodic protection system for the upcoming Marina Coastal Expressway (MCE) Tunnels. Dr. Qiu is also experienced in providing expert witness and assistance in litigation and arbitration matters related to corrosion and materials. He has authored over 120 technical papers and reports. 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), the only person in Singapore certified to the highest professional level by NACE (National Association of Corrosion Engineers, USA). He is 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).