

1. Personal Data

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Birth Inf. 11-11-1980, Maracaibo, Venezuela
Nationality Venezuelan
Languages Italian (Excellent) / English (Excellent) / Spanish (mother tongue)



2. Academic Qualifications

2010 PhD in Materials Engineering (Nano)

Politecnico di Milano-Milan-Italy. 3 years of Preparation/Experience in:

- Applied Electrochemistry
- Polymer structures and statistical properties
- BioTech
- Phase Transition and point defects
- Surface analysis and characterization
- Science and technology of materials
- Molecular simulation of materials
- Nano-technology and Nano-materials
- Materials characterization methods
- Scientific and technical writing

2005 Chemical Engineer (Processes)

La Universidad del Zulia (L.U.Z.) - Maracaibo, Zulia, Venezuela. 5 years of studies

2007-2009 Specialized Schools for Researchers

- CCMX Winter School: "Surface Sciences: Fundamental, properties and selected applications", January 2009. Les Diablerets, Switzerland
- Bath Electrochemistry winter school, January 2008. Bath, United Kingdom
- 13th Scuola AIMAT: Tecnologie innovative di superficie e loro applicazioni. Luglio 2007. Ischia, Italia

2002-2014 International Congresses, Workshops and Conferences

3. Main activities relevant to Panama Canal:

2011-2014 Consultant activities in non-destructive testing and durability of concrete

- Companies: Materials Advanced Services S.R.L., Bs As, Argentina and Quali-TI-Mat Sagl Switzerland
- Competences: Technical and Commercial Support/ Instrument Exhibitor & Materials Consultant
- Projects/Activities:
 - Non-destructive air permeability tester: Permea-TORR™. Swiss Standard SIA 262/1:2013. Booth Demos at III All-Russian International Conference on Concrete and Reinforced Concrete, 12-16 May, 2014 Moscow, Russia.
 - Comparison between concrete permeability tests procedures/standards. Analysis of specimen requirements, tests procedures and calculations. Holcim Technology (Switzerland).

2008-2009 Thesis Tutorial /Teaching/Lab Demos Collaborations (Materials)

Institutions: Politecnico di Milano, Italy & Polo di Lecco, Italy

Subjects

- Technology of materials
- Building materials
- Corrosion and corrosion control

Laboratory/Workshop/Exercises

- Mechanical behavior of materials
- Fracture mechanics
- Corrosion, for "Eni Corporate University (ECU)"

MSc Dissertation Thesis (Tutoring)

Degree: MSc in Materials Engineering – Student: BSc. in Mat. Eng. F. Zazzeron

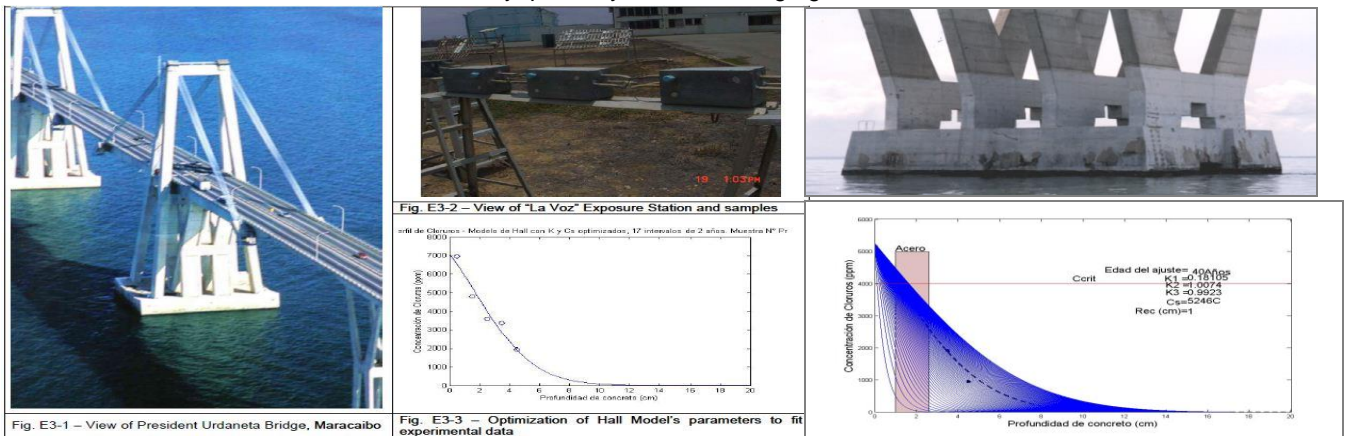
Title: "Oxides characterization through ac-voltammetry on cathodically protected mild steel structures"

2007-2010 PhD Researcher in Materials Engineering. Cathodic Protection, Metal Surface Characterization, ac Corrosion, Mathematical Modeling, etc. Italy & Switzerland's Polytechnics

2010 PhD Thesis "Study of ac corrosion on mild steel under cathodic protection". Characterization of oxides films by electrochemical and surface analytical methods. Politecnico di Milano. Italy.

2003-2005 Chem. Eng. Dissertation. The University of Zulia (L.U.Z.) - Center of Corrosion Studies (C.E.C.). Studies on a salty-lake reinforced bridge and of samples exposed in a marine station. Cores extraction, measurement of: chlorides, resistivity, potential and corrosion rate and modeling to predict the corrosion initiation time.

2005 Chem. Eng. Dissertation. "Evaluation of the FEM to estimate the initiation time of reinforcement corrosion in concrete". La Universidad del Zulia. Engineering Faculty. Center of Corrosion Studies (C.E.C.). Venezuela. The objective was to evaluate finite elements method (FEM) in the solution of the non-steady 2nd Fick's law, with variable diffusivity, to model the diffusion of chlorides into concrete. The diffusivity was assumed to be dependent on the chloride concentration, according to the Model of Hall. The main reason to use FEM was that the discretization equations obtained have clear physical meanings as compared to a formal mathematical approximation used by other methods. The work consisted in three phases: 1) Data were collected from reinforced concrete elements of Maracaibo Lake Bridge exposed to marine environment. The electrochemical potential, electrical resistivity, corrosion rate and cover depth were measured. Cores were drilled and sliced and the total and soluble chlorides content determined to obtain the chlorides profile in the cores. 2) The software was written in MATLAB7 to solve the 2nd Fick law's differential equation. An optimization routine was added to find the parameters of Hall's Model that fit best to the experimental data of chloride profiles. 3) The software, calibrated with the experimental data, was used to predict the evolution of the chlorides profile in the concrete structure with time. This prediction, combined with the knowledge of the cover depth and the critical chlorides concentration for initiation of corrosion provides an estimate of the service life of the element. The service life estimates obtained with the FEM-Software were compared with those obtained by the orthogonal collocation method and also with the solution of 2nd Fick's law for constant diffusivity. The results obtained with the FEM were more robust and consistent than those obtained mathematically with the orthogonal collocation method. However, the predictions of initiation of corrosion did not differ much from those obtained for constant diffusivity, probably due to the long age of the structure.



2004-2004 Industrial International Project. Evaluation and development/application of a new lab and "in situ" measurement test. Venezuelan and Swiss Labs (The Univ. of Zulia, EMPA and SUPSI).

2004 Eng. Industrial Project "Feasibility study on a new test to measure the porosity and permeability of rocks". La Universidad del Zulia. Engineering Faculty. Chemistry School. (Venezuela & Switzerland). The objective of the project was to assess the potential of one permeability tester (TPT) to measure the permeability and, eventually, also the porosity of rock samples, aiming at accurate, simple and economical tests capable of replacing or complementing the ones currently in use in the oil-gas industry. Phases of the project: 1. State-of-the-art report on the relevance of the knowledge of the porosity and permeability of rocks for the oil industry. 2. Preliminary application of the TPT on rock samples of different types in two laboratories. 3. Cores were drilled from the rock samples and tested by conventional permeability test methods in two other specialized laboratories, to compare the results with those of the TPT. 4. Elaboration of an enquiry on the potential impact of an eventual new test method, and its distribution in some specialized laboratories. The TPT showed reasonable good agreement with other tests, a greater sensitivity for low-permeability rocks and capability to detect the presence of cracks and porous zones in the rock. It would be advantageous to adapt the TPT for direct application on cylindrical core samples. The replies to the enquiry indicated that a new, simpler and more versatile method to measure the porosity and permeability of rocks has potential and is of great interest for oil and gas industries.



2002-2002 Corrosion Engineering Project. The University of Zulia (L.U.Z.) - Center of Corrosion Studies (C.E.C.).
Corrosion studies in a salty lake environment, diagnosis, surface analysis and analytical-chemical tests
2002 Corrosion Eng. Project "Effects of salty Maracaibo lake environment on the Corrosion of cold-worked aluminum".
*La Universidad del Zulia (L.U.Z.). Engineering Faculty. Center of Corrosion Studies (C.E.C.)

ANNEXES

Contributions/Publications/Notes/Proceedings/Exhibitions

- V. Bueno. "Non-destructive air permeability tester Permea-TORR™". Swiss Standard SIA 262/1:2013". Materials Advanced Services S.R.L. Bs As, Argentine. "III All-Russian International Conference on Concrete and Reinforced Concrete", 12-16 May, 2014 Moscow, Russia. Demo Boot.
- V. Bueno. "Study of ac corrosion on mild steel under cathodic protection". Characterization of oxides films by electrochemical and surface analytical methods. Politecnico di Milano, Italy. Thesis dissertation to obtain the degree of "Ph.D. in Materials Engineering". February 2010. pp 163.
- V. Bueno, L. Lazzari, M. Ormellesse, P. Spinelli: "Characterization of metal nano-surfaces through the study of the fundamental electrochemistry of the double layer". Politecnico di Milano and Politecnico di Torino, Italy. "The 59th Annual Meeting of the International Society of Electrochemistry" (ISE), September 7 to 12, 2008 Seville, Spain. Proceeding. Paper s03-P-007.
- V. Bueno, L. Lazzari, M. Ormellesse, P. Spinelli: "Innovative application of ac-voltammetry in the characterization of oxide nanolayers formed on metals". Politecnico di Milano and Politecnico di Torino, Italy. "New nano-materials for Electrochemical Systems". Montreal 24-27 June 2008, Canada. Proceeding. Paper NMES08-47
- V. Bueno, L. Lazzari, M. Ormellesse, P. Spinelli: "Interaction between alternating current and cathodic protection over nano sized/structured surface metals". Politecnico di Milan and Politecnico di Torino, Italy. "NSTI Nanotechnology Conference and Trade Show", June 1-5, 2008, in Boston, Massachusetts, U.S.A. Proceeding. Paper 569.
- V. Bueno, C. Araujo, O. Rincón: "Initiation time of reinforcement corrosion in concrete under variable chloride diffusion coefficient, using FEM". La Universidad del Zulia. Engineering Faculty. Center of Corrosion Studies. Maracaibo, Venezuela. "CAPI 2007: Calcolo ad alte Prestazioni in Italia", Ottobre 15-16, 2007, Politecnico di Milano-Bovisa, Italia. Wall paper. C.I.L.E.A. Prot. N. 3585.
- V. Bueno. "Evaluation of the FEM to estimate the Initiation time of reinforcement corrosion In concrete". La Universidad del Zulia. Engineering Faculty. Center of Corrosion Studies. Maracaibo, Venezuela. Thesis dissertation to obtain the degree of "Chemical Engineer". October 2005. pp 177.
- V. Bueno. "Feasibility study on a new test to measure the porosity and permeability of rocks". La Universidad del Zulia. Engineering Faculty. Chemistry School. Maracaibo, Venezuela. International Industrial Project to obtain the degree of "Chemical Engineer". February 2005. pp 88.
- V. Bueno, M. Pena. "Effects of salty Maracaibo lake environment on the Corrosion of cold-worked aluminium". *La Universidad del Zulia. Engineering Faculty. Center of Corrosion Studies. "VI National Congress of Chemical Engineering Students". VI CONEIQ 2002. October 2002. Maracaibo, Venezuela. Poster and Oral contribution.