Homero Castaneda-Lopez

213D Research Engineering Building
Chemical and Biomolecular Engineering Department
National Center for Research in Corrosion and Materials Performance (NCERCAMP)
The University of Akron, Akron OH
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Education

2001 Ph.D. Materials Science and Engineering, Penn State University, University Park, PA
1997 M.S. (Honors), Materials Science, National Autonomous University of Mexico, UNAM
1995 B.S. (Honors) Chemical-Metallurgical Engineering, National Autonomous University of Mexico, UNAM

Professional Positions

Dec 2010 to date Assistant Professor, Chemical and Biomolecular Engineering- National Center for Research in Corrosion and Materials Performance, **the University of Akron**, Akron OH

July 2010 to December 2010, Senior Corrosion Specialist, **ATI Allegheny Ludlum**, Technical Center, Natrona Heights, PA

November 2006 to June 2010, Principal Research Scientist, Energy Systems and Advanced Materials-**Battelle Memorial Institute**, Columbus OH

October 2002 to November 2006 Research Leader, Pipelines, Corrosion and Materials Division-**PEMEX/Mexican Petroleum Institute**, Mexico City

October 2002 to November 2006 Adjunct Associate Professor, College of Chemistry-**National Autonomous University of Mexico (UNAM)**, Mexico City

January 2001 to October 2002 Electrochemist Researcher, Research and Development -**Siemens** Lowell, MA

Honors and Awards

- Fellowship from the National University of Mexico DGAPA (1997-2000).
- Honorable mention for academic achievement in undergraduate studies from the National Autonomous University of Mexico (1995).
- Honorable mention for academic achievement in graduate studies from the National Autonomous University of Mexico (1997).
- Graduate studies award (Antonio Caso) for best student in Posgraduate studies (1997)
- Research Award, 1996 by the National University Autonomous of Mexico Foundation to do Research in North America during 6 months 10/96 to 04/97.
- National Research Council in Mexico, SNI Level I (2007-2013)
- National Research Council in Mexico, SNI Level II (2014-2017)

- Who is Who in America (electrochemistry, corrosion and energy), 2011- 2013 Editions
- CONACYT- RCEA reviewer (2011-)

Supervision of Research

Current Posdoctoral Fellows

- Dr. Omar Rosas, Topics: Internal corrosion in pipelines, corrosion in concrete structures, materials selection for corrosion and Li-ion batteries, NSF-Mexico, DOE-ARPA-e, (2012-2014)

- Dr. Roberto Hernandez, Topics: Lithium ion batteries, non-chromate coatings and corrosion inhibitors, DOE-ARPA-e and DoD, (2013-2015)

Current Graduate Students

- Ph.D., Enrique Maya Visuet, Chemical and Biomolecular Engineering Department, PhD in Engineering-Materials and Corrosion (2011-2014), the University of Akron

- Ph.D., Ahmad Ivan Karayan Chemical and Biomolecular Engineering Department, PhD in Engineering-Materials and Corrosion (2011-2014), the University of Akron

- Ph.D., Ximing Li, Chemical and Biomolecular Engineering Department, PhD in Engineering-Materials and Corrosion (2012-2015), the University of Akron

- Ph.D., Jiani Niu, Chemical and Biomolecular Engineering Department, PhD in Engineering-Materials and Corrosion (2012-2015), the University of Akron

- Ph.D, Dongrui Yang, Chemical and Biomolecular Engineering Department, PhD in Engineering-Materials and Corrosion (2012-2015), the University of Akron

- MS/PhD Austin Smith, Chemical and Biomolecular Engineering Department, PhD in Engineering-Materials and Corrosion MS (2013-2014), PhD (2014-2017), the University of Akron

- Ph.D. Javier Esquivel, Chemical and Biomolecular Engineering Department, PhD in Engineering-Materials and Corrosion PhD (2013-2018), the University of Akron

- Ph.D. Israel Barraza Fierro, National University of Mexico and the University of Akron, PhD in Engineering (2010-2014)

- MS/PhD Violeta Valencia, Chemical and Biomolecular Engineering Department, PhD in Engineering-Materials and Corrosion MS (2014-2016), PhD (2016-2019), the University of Akron

- M.S. Yenny Cubides, Chemical and Biomolecular Engineering Department, MS in Chemical Engineering - Corrosion (2014-2016), the University of Akron

Current Research undergraduate students

- David Waliworski, Corrosion Engineering –Coatings, internal corrosion in pipelines
- Ana Bacco, Corrosion Engineering –Thin films and inhibitors
- Kyle Platt, Corrosion Engineering- Stainless steel alloys and thin films
- Ian Coleman, Corrosion Engineering- Stainless steel alloys and thin films
- Derrick Coy, Corrosion Engineering- Coatings and crevice corrosion
- Stephen Ball, Corrosion Engineering- Coatings characterization
- Joshua Geyer, Corrosion Engineer- Stainless steel characterization
- Joe Phillips, Corrosion Engineer- Coatings and inhibitors
- Nathan Sutton, Corrosion Engineer-Cathodic protection for SCC
- Feby Mathew, Corrosion Engineer- Coatings and materials
- Michael Harris, Corrosion Engineer- Super duplex stainless steel characterization
- Abigail Helbling, Corrosion Engineer- Corrosion inhibitors

ALUMNI

- Jorge Alamilla, Posdoctoral Fellow Oct 2004-Oct 2005, Topic: Risk assessment and life time prediction calculation for buried pipeline systems transporting hydrocarbons, currently Research Scientist and Project Leader with Mexican Petroleum Institute, Mexico.
- Velumani Subramanian, Posdoctoral Fellow Oct 2003-Jan 2005, Topic: Nanomaterials characterization for alternative energy sources“, currently Professor with CINVESTAV-Mexico.
- Xochitl Dominguez Benetton, Thesis: Biocomplexity and electrochemical influence of biofilms in carbon steel deterioration in gasoline-containing environments, PhD Defense 2007, currently Principal Research Scientist in VITO, Belgium
- Fernando Farelas, Thesis: Electrochemical modeling of the mechanisms of steel-CO_2 process under flow conditions, Ph. D. Defense 2010, currently Postdoctoral Researcher. Ohio University
- Enrique Maya-Visuet, Thesis: Interfacial reactions and mechanisms for direct methanol fuel Cells, MS Defense 2009, currently Ph.D. student at the University of Akron
- Griselda Zambrano, Thesis: Flow Rate effect for the X52 steel corrosion in NaCl and CO_2 solution, MS Defense 2004, currently Assistant Professor Metropolitan University, Mexico
- Omar Rosas, Thesis: Studies for the Methanol electrochemical cell by Electrochemical Impedance Spectroscopy, MS Defense 2005, currently Posdoctoral Fellow at the University of Akron
- Maricruz Hernandez, Thesis: Proposed monitoring system in a hydrodynamic module for corrosion rates, based on time domain techniques, MS Defense 2005, currently with the National University of Mexico as PhD student

- Israel Barraza Fierro, Thesis: Thermodynamic study for materials used for corrosion sensors, MS Defense 2005, currently with the National University of Mexico and the University of Akron as PhD student
- Roberto Hernandez, Thesis: Evaluation of two biodegradable corrosion inhibitors prototypes for cooling tower application, MS Defense 2005, currently Posdoctoral Fellow at the University of Akron
- Diana Munoz, Thesis: Development of prototypes for external corrosion in buried pipelines with emphasis in cathodic protection, BS Chemical Engineering 2013, currently Ph.D. student at the University of Akron
- Yenny Cubides, Thesis: Electrochemical characterization of corrosion inhibitors, BS Chemical Engineering 2013, currently Ph.D. student at the University of Akron

Funded Research- (2011-2013) at UAkron

- Research and development for the damage evolution of Deft coating/7075 t6 alloy-system under stress conditions based on advanced electrochemical techniques and reliability analysis, DOD-AFRL $200,000 USD, Homero Castaneda (PI)-36 months, November 2013 to November 2016

- Mutiscale tools for corrosion science and engineering in buried pipelines: enhancement of corrosion management technologies for external corrosion, internal corrosion and stress corrosion cracking, SENER-CONACyT Hydrocarbons, total budget $ 4,250, 000.00 USD, and $1,032, 243.00 USD for UAkron, Homero Castaneda (PI)-42 months, November 2011to May 2015

- Dynamic electrochemical characterization and monitoring of operating lithium ion batteries, DOE ARPA-e, total budget, $ 999,995.00USD and $135,435.00USD for UAkron, Homero Castaneda (PI)-18 months, Nov 2012 to May 2014

- Theoretical assessment of AC impedance for detection of disbonded coating for buried steel pipes by using multiscale transmission line modeling, Con Edison, $62,220.00 USD (phase I), Homero Castaneda (PI)-15 months, September 2012 to December 2013

- Damage evolution of coating/steel interface, lifetime prediction determination for oil and gas infrastructure, PPG, $49,995.00 USD (phase I), Homero Castaneda (PI)-12 months, January 2013 to December 2013

- Characterization and development of electrodes and charge transfer processes for Biofuel cells, CONACYT-SEP Basic Research, $100, 000.00USD Monica Galicia (PI), Homero Castaneda (Co-PI)-36 months, October 2012-October 2015

- Evaluation of electrochemical tools for performance of corrosion resistant rust preventatives, Lubrizol, $25,000 USD (phase I), Homero Castaneda (PI)-12 months, January 2012 to January 2013.

- Characterization of water based inhibitors in different alloys under flow conditions, Lubrizol, $50,000 USD (phase II-III), Homero Castaneda (PI)-12 months, January 2014 to January 2015.

- Materials selection for storage tanks, Cargill, $15,000 USD, Homero Castaneda (PI)-16 months, September 2011 to December 2012

- Failure Analysis on storage tanks, Cargill, $3,000 USD, Homero Castaneda (PI)-3months-June 2013 to August 2013

- Unification of coating damage/performance technologies as a basis for damage functions and reliability analysis, Department of Defense-CERL, $125,000 USD, Homero Castaneda (PI)-36 months, July 2011 to July 2014

- The integration of theoretical and experimental corrosion assessment tools to monitor and manage coating/substrate integrity, Department of Defense-AFRL, $250,000 USD, Homero Castaneda (PI)-36 months, July 2013 to July 2016

- Corrosion assessment for concrete rebar structures, Department of Defense-CERL, $120,000 USD Anil Patnik (PI), Homero Castaneda (Co-PI)-36 months, July 2011 to July 2014

- Corrosion assessment for coating/substrate system based on deterministic and probabilistic approach, Department of Defense-AFRL, $155,000 USD, Homero Castaneda (PI)-36 months, July 2011 to July 2014

- Validation of model for crevice corrosion by experimental testing for metal/ alloys used for military applications, Department of Defense-CERL, $30,000 USD, Gerald Young (PI), Homero Castaneda (Co-PI) -36 months, July 2011 to July 2014

- Design, testing and characterization of microscale, concrete corrosion test cells, Department of Defense-CERL, $40,000 USD, Homero Castaneda (PI)-36 months, July 2011 to July 2014

- Microbiology induced corrosion-monitoring and assessment, Department of Defense-AFRL, $15,000 USD, Bimin Newby(PI), Homero Castaneda (Co-PI)-18 months, June 2011 to December 2012

Publications: Peer-reviewed Journal Articles

(Student, Post-Doctoral and advisee contributors are underlined), *: corresponding author

1. Ivan Karayan, Enrique Maya, **H. Castaneda***, Transpassive dissolution of UNS N08367 alloy in LiCl solution, *J. of Solid State Electrochemistry*, December 2013

2. M. Galicia, X.M. Li, **H. Castaneda***, Interfacial characterization of glassy carbon electrode scaffold modification with chitosan-single walled and chitosan-multiwalled carbon nanotubes under flow conditions, *Electrochimica Acta*, October 2013.
3. Enrique Maya; Tonghazi Gao, Mark Soucek and **H. Castaneda***, Effect of TiO_2 as a pigment in polyurethane/polysiloxane hybrid coating/aluminum interface based on interfacial damage evolution, *J. of Progress in Organic Coatings*, October 2013.
4. O. Rosas, R. Hernandez, J. Saunders and **H. Castaneda***, Dynamic characterization of dendrite deposition and growth in Li-ion batteries by electrochemical impedance spectroscopy, *J. of Power Sources*, December 2013.
5. I. Barraza, X. Li, M. Espinosa, **H. Castaneda***, Corrosion behavior of Fe-40at.%Al with Cu and Li additions in a molten LiCl-KCl eutectic salt, *J. of Solid State Electrochemistry*, November 2013.
6. Ivan Karajan and **H. Castaneda***, Weld decay failure of AISI 316L stainless steel storage tank, *J. of Materials and Design*, October 2013.
7. O. Rosas, Enrique Maya and **H. Castaneda***, Effect of chloride ions on the electrochemical performance of LDX 2003 alloy in concrete and simulated concrete pore solutions, *J. of Applied Electrochemistry*, December, 2013.
8. Dongrui Yang, Omar Rosas, and **H. Castaneda***, Imidazolium ionic liquid as high efficiency corrosion inhibitor of mild steel in carbon dioxide saturated NaCl brine, *J. of Solid State Electrochemistry*, October 2013.
9. H. Wang, A. Yajima, R.Y. Liang, and **H. Castaneda**, Bayesian modeling of external corrosion in underground pipelines based on the integration of MCMC techniques and clustered inspection data, *Computer-Aided Civil and Infrastructure Engineering*, August 2013
10. J. Niu, J. Barraza-Fierro, **H. Castaneda***, Quantification of protective properties of the coating-steel interface under disbondment simulation conditions using a transmission line model, *J. of Solid State Electrochemistry*, September 2013.
11. Dongrui Yang, Omar Rosas, and **H. Castaneda***, $FeCO_3$ layer evolution for API X52 steel in carbon dioxide saturated NaCl brine in presence of 1-decyl-3-methylimidazolium chloride ionic liquid, *Corrosion Science*, September 2013
12. X. M. Li, B Faber, B Minch, **H Castaneda***, Analysis of soft coating corrosion performance on carbon steel using electrochemical impedance spectroscopy, *Corrosion*, July 2013.
13. J. I. Barraza-Fierro , B. F. Campillo , X.M. Li, **H. Castaneda***, Steel microstructure effect on mechanical properties and corrosion behavior of medium strength low carbon steel, J. of *Metallurgical and Materials Transactions A*, August 2013.
14. O. Rosas, J Saunders and **H. Castaneda***, Interfacial electrochemical analysis on $LiCoO_2$/carbon nanotubes layers as cathode active composite in aqueous electrolytes, *Electrochimica Acta* 113 (2013) 77– 86
15. **H. Castaneda*,** The impedance response of different mechanisms for $LiCoO_2$ /acetylene carbon electrodes in alkaline solutions under polarization conditions, *Electrochimica Acta* 112 (2013) 562– 576
16. Roberto C. Hernandez Maya, Orlando Ugalde Reyes, Jesus Gracia Fadrique, **Homero Castaneda Lopez,** and Pedro Roquero Tejeda, A voltammetry study of ethanol oxidation on carbon supported non alloyed platinum-tungsten catalysts *Journal of The Electrochemical Society*, **160** (3) H185-H191 (2013)

17. **H. Castaneda***, M. Galicia, Proposed model for quantification of dissolution and evolution for steel-CO_2 solution porous interface by AC impedance-transmission line, *J. of Solid State Electrochemistry*, Volume 16, Issue 9 (2012), Page 3045-3058.
19 Camacho-Alanis, F., **Castaneda, H**. , Zangari, G., Swami, N.S., Electrochemical impedance study of GaAs surface charge modulation through the deprotonation of carboxylic acid monolayers, *Langmiur*, Volume 27, Issue 18, 20 September 2011, Pages 11273-11277**.**

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20 Lingling Wu, Fernanda Camacho-Alanis, **H. Castaneda**, Giovanni Zangari, Nathan Swami, Sensing the effect of light on self-assembled monolayer on GaAs using electrochemical impedance spectroscopy, *Electrochimica Acta*, 55(2010), 28 pp 8758-8765.
21 **H. Castaneda*,** B. Tan, J.Saunders, Electrochemical characterization of the $LiCoO_2$ /acetylene carbon ratios for porous electrodes in lithium aqueous solutions by electrochemical impedance spectroscopy, *Electrochimica Acta*, Volume 55, Issue 13, 1 May 2010, Pages 4137-4143.
22 F.Farelas, M.Galicia, B.Brown, S.Nesic, **H. Castaneda**, Evolution of active-passive mechanisms at the interface of carbon steel CO_2 corrosion environment by EIS", *Corrosion Science* 52, pp. 509–517. (2010).
23 **H. Castaneda***, The impact of sour environment in anodic dissolution of metallic structures used in the refinery industry, *Hydrocarbon World*, 4 (2) 2009.
24 **H**.**Castaneda*,** E. Sosa, Espinosa, M.A., Film properties and stability influence on impedance distribution during the dissolution process of low-carbon steel exposed to modified alkaline sour environment, *Corrosion Science*, 51, No. 4, pp 799-806, 2009
25 **H. Castaneda***, X. D. Benetton, SRB-Biofilm influence in active corrosion sites formed at steel-electrolyte interface when exposed to artificial seawater, *Corrosion Science*, 50, No.4, pp 1169-1183, 2008.
26 Balasundaraprabhu, R., Jayakumar, S., Kannan, M.D., Muthukumarasamy, N., Velumani, S., **Castaneda, H.,** Characterization of hot wall deposited CdSe0.6Te0.4 thin films, *Journal of New Materials for Electrochemical Systems* 10 (1), pp. 55-59, 2007.
27 **Castaneda, H.**, Kim, S.-I., Kim, Y.-H., Kim, Y.T., Wakahara, A., Son, C.-S., Choi, I.-H., Optical properties of Er-doped GaN**,** *Revista Mexicana de Fisica* 53 (1), pp. 9-12, 2007.
28 E. Sosa, V. Garcia and **H. Castaneda**, Impedance distribution at the interface of the API steel X65 in marine environment, *Electrochimica Acta* Volume 51, Issues 8-9 , 20, pp. 1855-1863. 2006,
29 S. Velumani, **H. Castaneda**, J. Asencio, U. Pal, Chavez JA., J. Sebastian, Structural and electrochemical characterization of sputter deposited nitrided NiCr alloys, *J. of Solid State Electrochemistry* 9 (8): 535-546 2005.
30 Son, C.-S., Kim, S.-I., Kim, Y.-H., Seong-Ill, K., Kim, Y.T., Choi, I.-H., **Castañeda Lopez, H,** Deposition temperature dependence of ZnO/Si grown by pulsed laser deposition**,** *Journal of the Korean Physical Society*, Vol. 45, December 2004, pp. S685-S688.

31 Son, C.-S., Kim, S.-I., Kim, Y.-H., Han, I.-K., Kim, Y.T., Wakahara, A., Choi, I.-H., **Castañeda Lopez, H.,** Photoluminescence of Er-implanted GaN**,** *Journal of the Korean Physical Society* 45 (4), pp. 955-958, 2004

32 **H. Castaneda***, J. Alamilla, R. Perez, Life prediction estimation of an underground pipeline using alternate current impedance and reliability analysis, *Corrosion* 60 (5): 429-436 May 2004.

33 **H. Castaneda**, M. Urquidi-Macdonald, Detecting external failure and corrosion in coated, buried pipelines: transmission line model and experimental verification. *Corrosion* 60 (6): 538-547, 2004.

34 M. Urquidi-Macdonald, **H. Castaneda** and Angela M. Cannon, Lithium fuel cells: I. Lithium/poly(organophosphazene) membrane anodes in KOH and seawater. *Electrochimica Acta* 47: 2495-2503, 2002.

Book Chapters

Ahmad Ivan Karayan, Deni Ferdian, Sri Harjanto, Dwi Marta Nurjaya, Ahmad Ashari and **Homero Castaneda**, Finite element analysis applications in failure analysis: Case studies, http://dx.doi.org/10.5772/51024

H. Castaneda and O. Rosas, External corrosion of underground pipelines- critical factors, Oil and Gas Pipelines: Integrity and Safety Chapter John Wiley and Sons to be published January 2014.

Proceedings and Conferences Presentations

1. Ximing Li and **H. Castaneda**, Influence of soil parameters on coating damage evolution of X52 pipeline steel under cathodic protection conditions, Corrosion NACE 2014 San Antonio, TX, Paper to be published.
2. Dongrui Yang, O. Rosas and **H. Castaneda**, Characterization of the inhibition effect in pipeline grade steel for ionic liquids in CO_2-saturated NaCl brine solutions, Corrosion NACE 2014 San Antonio, TX, Paper to be published.
3. A. Yajima, R. Liang, H. Rivera, L.Martinez, A. I. Karayan, **H. Castaneda**, Macro modeling concept for the soil/coating external corrosion for ECDA process by using statistical tools- A case of study, Corrosion NACE 2014 San Antonio, TX, Paper to be published.
4. Ayako Yajima, **H. Castaneda**, Hui Wang, and Robert Liang, Application of cluster analysis for soil corrosivity assessment, Transportation Research Board (TRB) 93rd Annual Meeting Washington, D.C., 2014.
5. Austin Smith and **H. Castaneda**, Early stage analysis by time domain approach for non-hex chrome coatings and AA2024/AA7075 substrate, Research in Progress, NACE 2014, San Antonio TX.
6. Jiani Niu and **H. Castaneda**, Proposed model and experimental verification for the electroactive species mechanisms in Hex-Chrome free coating/2024 T3 system by 2D-transmission line model, Research in Progress, NACE 2014, San Antonio TX.

7. Enrique Maya Visuet, Todd Hawkins and **H. Castaneda**, Electrochemical characterization of a zinc rich epoxy nano-coating primer in NaCl solutions, Research in Progress, NACE 2014, San Antonio TX.
8. Ahmad Ivan Karayan and **H. Castaneda**, Proposal of crevice corrosion assembly for the characterization of Titanium (Grade 2) in NaCl solutions, Research in Progress, NACE 2014, San Antonio TX.
9. Ximing Li, Q.Huang and **H. Castaneda**, Corrosion assessment of underground coated pipelines based on coating/steel damage evolution and system reliability analysis, Western NACE Conference in Honolulu, HI, November 2013.
10. A Yajima, R, Liang, X.M. Li, **H. Castaneda**, Dynamic characterization for soil/environmental conditions in coating/substrate metal interface systems by data mining (probability) modeling, Oral presentation Electrochemical Society Meeting, San Francisco, CA October 2013.
11. **H. Castaneda**, R. Hernandez, J.Saunders, O. Rosas, Characterizing Lithium ion dendrites growth with dynamic impedance and transmission line modeling- initial stage and grow stage, Oral presentation ISE, Qro, Mexico, September 2013
12. O. Rosas, J. Saunders, **H. Castaneda** and R. Hernandez, Time evolution quantification of the interfacial parameters for lithium ion interfaces using liquid ions, Oral presentation ISE, Qro, Mexico, September 2013
13. M. Galicia, **H. Castaneda**, Glassy carbon electrode scaffold modification with chitosan-SWCNT and chitosan-MWCNT and their electrochemical characterization under flow regime influence, Oral presentation ISE, Qro, Mexico, September 2013
14. F. Arya, L. Zhang, A. Rahimi, H. Rivera, L. Martinez, **H. Castaneda**, Dynamic macro modeling for the soil characteristics as complement for Pre-evaluation step in the ECDA Method, NACE Paper No 2574, Orlando Florida 2013.
15. Yajie Chen, Rebecca Howdyshell, Bi-Min Zhang Newby, **H. Castaneda**, John M. Senko, Severe pitting corrosion caused by a starving sulfate-reducing bacterium surviving on carbon steel and effect of surface roughness, NACE paper No. 356, Orlando Florida 2013.
16. Ivan Karajan and **H. Castaneda**, Electrochemical characterization of steel in active interface due to heterogeneous layer in CO_2 environment for two NaCl concentrations NACE paper No. 2586, Orlando Florida 2013.
17. Ana Bacco, Britt Minch, Ben Faber, **H. Castaneda,** Rust preventive film characterization by electrochemical impedance spectroscopy and the ASTM B117 method, NACE paper No 2569, Orlando Florida Accepted 2013.
18. Enrique Maya-Visuet, Ahmad Ivan Karayan, **H. Castaneda**, Electrochemical characterization of UNS S31603, S32205, S32760, N08367, and S3210, RIP Corrosion NACE, Orlando Florida 2013.
19. Dongrui Yang and **H. Castaneda**, Layering evolution for the steel/CO_2 electrochemical interface with imidazolium compounds by EIS, RIP Corrosion NACE, Orlando Florida 2013.
20. Enrique Maya-Visuet, Ahmad Ivan Karayan, **H. Castaneda**, Electrochemical characterization of UNS N08367 and UNS S31603 alloys in presence of chloride and bromide solutions, ECS Transactions 2012, ECS Honolulu, Hawaii.
21. I. Barraza, B. Campillo, **H . Castaneda**, Tempering effect on corrosion behavior for micro-alloyed steels in NS4 solution, MRS Annual meeting 2012, Cancun Mexico

22. **H. Castaneda**, R. Mora, M. Vergara and M. Galicia, Proposal of DC basis technologies with macro tool approach to asses active-corrosion sites in buried pipelines, NACE Corrosion 2011, Houston TX. Paper No. 11313

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23. **H. Castaneda**, B. Hindin, A. Yajima, A proposed model for coated steel exposed to simulated soil environments by unifying mechanistic and statistical approaches, International Electrochemical Society 2010 Columbus, Ohio, USA
24. S. Valdez, S. R. Casolco, **H. Castaneda**, Electrochemical characterization of the Al-Mg foamed materials in NaCl solutions, TMS Annual Meeting & Exhibition 2010, Seattle, WA
25. Risser, S. Tan B. **Castaneda H.,** Sphar, K., Stasik, M, McGuiness, V. (2010) Nanotechnology 2010:Biosensors Instruments, Medical, Environment, and Energy, Tech Proceedings of the NSTI Nanotechnology Conference, and Expo, NSTI-NanoTech 2010,3, p.p 797-800.
26. Fernanda Camacho-Alanis, Lingling Wu, Giovanni, Zangari, **Homero Castaneda-Lopez**, Nathan Swami, Probing the modulation of surface charge on semiconductors by impedance spectroscopy, 216th Electrochemical Society Annual Meeting, Vienna Austria, 2009.
27. M. Galicia, **H. Castaneda**, Inspection technologies and tools used to determine the effectiveness of cathodic protection for subsea pipelines in the Gulf of Mexico- A review, Paper 09527, NACE 2009, Atlanta, GA, 2009.
28. Bruce M Sass, Hamid Farzan,(Rajeev Prabhakar, Mohit Bhargava, Jacqueline, L Gerst, Joel R. Sminchak, **Homero Castaneda-Lopez**, and José D. Figueroa, Considerations for Conditioning Oxy-Combustion Flue Gas Prior to Sequestration, ICPWS XV Berlin, 2008
29. **H. Castaneda**, B. Hindin, Electrochemistry and Corrosion behavior for different steels in ethanol- brine solutions, Paper #03325, ICC 2008, Las Vegas Nevada, 2008.
30. **H. Castaneda**, B. Leis, J. Alamilla, Proposed algorithm for life time prediction based on carbon steel under corrosion conditions in two different flow and corrosion control conditions, Paper #03083, ICC 2008, Las Vegas Nevada, 2008
31. O. Rosas-Camacho, **H. Castaneda** and M. Urquidi-Macdonald, "Interpretation of AC impedance spectroscopy measured on different precious metals-electrolyte interfaces used for methanol fuel cells by mean of two theoretical models“ Electrochemical Society Annual Meeting, Chicago, Ill, 2007.
32. R. Hernandez, Galicia, M., and **H. Castaneda**, Electrochemical characterization of X80 steel under sour environments and addition of Imidazoline based compounds under linear flow conditions, *ECS Trasactions*, 3 (13) 181-198 (2007)
33. R. Hernández, M. Galicia, **H. Castaneda**, L. Zamudio, Dissolution and inhibition mechanism of 1018 steel in simulated cooling water by adding Phosphonoacetic Acid compound under two flow conditions, *ECS Transactions*, 1 (9) 223-240 (2006).
34. **H. Castaneda** and B.N. Leis," Hydrogen entry mechanism for API X-65 steel exposed in near neutral solutions under adsorption-activation conditions", NACE 2007, Paper No. 07499, Nashville, TE, March 11th , 2006.
35. R. Hernández, M. Galicia**, H. Castaneda**, L. Zamudio," Dissolution and inhibition mechanism of 1018 steel in simulated cooling water by adding phosphonic Acid

compound under two flow conditions", Los Angeles, CA, October16-21, 2005.

36. X. D.-Benetton and **H. Castaneda**, "SRB-biofilm growth and influence in corrosion monitoring by electrochemical impedance spectroscopy", NACE 2005, Paper No. 05486, TEG-187, Houston, TX, 2005.
37. **H. Castaneda**, J. Alamilla and O. Flores-Macias, "Life prediction and reliability analysis of pipe steel used for oil transportation when exposed to Cl^- and CO_2 solutions under flow conditions",Paper #04184, New Orleans, LA, 2004.
38. **H. Castaneda**, G. Zambrano, C. Angeles and J. Genesca, "Film stability for API 5L X-52 line pipe steel in CO_2 (aq) and Cl^-(aq) solutions in presence of amine based inhibitor under hydrodynamic conditions", Paper #04361, New Orleans, LA, 2004
39. **Homero Castaneda**, P.J.Sebastian, and T.Mahalingam, S.Velumani, M.Raja, S.Thanikaikarasan, "Electrocrystallization and studies on of ferrous selenide thin films" XIII International Materials Research Congress, Symposium 2, Solar Hydrogen Fuel cells, 2004, ISBN 968 863 7572, Cancun, Mexico
40. S.Velumani, M.Raja, J.A.Chavez, **Homero Castaneda** and T.Mahalingam, Preparation and characterization of CoMn alloy thin films, XIII International Materials Research Congress, Symposium 5, Magnetic Materials, ISBN 968 863 7572**,** 2004, Cancun, México.
41. S.Velumani, M.Raja, J.A.Chavez, **Homero Castaneda** and T.Mahalingam, "The influence of pH on Galvanostatically deposited CoNi alloy thin films, XIII International Materials Research Congress, Symposium 5, Magnetic Materials, 2004, ISBN968 863 7572, Cancun, Mexico,
42. T.Mahalingam, M.Raja, J.A.Chavez,, **Homero Castaneda** and S.Velumani, Electrosynthesis and characterization of lead oxide thin films, XIII International Materials Research Congress, Symposium, Magnetic Materials, 2004, ISBN 968 863 7572, Cancun, Mexico.

43. **H.Castaneda**, S.Velumani and J.A.Ascencio, Electrochemical study of nanostructured semiconductor films, XII International Materials Research Congress, Symposium 1, Nanostructured Materials and Nanotechnology, 2003, Cancun, Mexico
44. M. Urquidi-Macdonald, H. Allcock, **H. Castaneda** and Angela M. Cannon, "Lithium Fuel Cells: III. Swelling of the Lithium/90:10 TFC/COOLi poly (organophosphazene) membrane anodes in KOH and seawater", Electrochemical Society Annual Meeting, San Fracisco, CA, 2001.
45. **Homero Castaneda** and Mirna Urquidi-Macdonald. "Location of holidays and assessment of level of cathodic protection on underground pipelines using AC impedance and artificial neural networks". Corrosion NACE, Orlando, Florida, 2000
46. **Homero Castaneda** and M. Urquidi-Macdonald. "Detection of localized corrosion activity on underground pipeline systems using AC-Impedance". 196th Electrochemical Society Annual Meeting. Honolulu, Hawaii, 1999
47. P. Castro, **Homero Castaneda** and A. A. Sagües, "Behavior of the reference electrodes (Activated titanium rods) embedded in concrete and exposed to marine environment for two years". NACE LARCC '96. Rio de Janeiro, Brazil, 1996

Patents and Copyrights

- Author: **H. Castaneda** and A. Yajima, Copyright RiskManage© software for internal and external corrosion assessment for off-shore infrastructure oil and gas facilities, in process 2013
- Patent Disclosure Method to localized and sense coating disbondment in real time with high resolution in buried pipelines, **H, Castaneda** and XM. Li, November 2013.
- Patent Disclosure, Assessment method and system of life time prediction of steel/coated structures by generating and solving the damage vs. performance function, **H. Castaneda**, A. Yajima, January 2012.
- Patent Disclosure, Environmental inhibitors for acid condition for metallic steel structures, **H. Castaneda**, D. Yang, September, 2013.
- Patent Disclosure Nanostructured graphene for storage devices, A. Heintz, S. Risser, Eldhard, J, **H. Castaneda**, January 2010.
- Patent Disclosure Hybrid Electrochemical Electricity Storage materials and devices for High Energy and Power Density **H. Castaneda**, J. Saunders, S. Risser, Bradley Glenn, V. McGinnins. September 2009.
- Patent pendant, PCT/US10/22294, Supercapacitor materials and devices, March 2009, S. Risser, V. McGinnis, B. Tang, K. Spar, **H. Castaneda**
- MX Patent No. 260896, September 2008, **H. Castaneda**, R. Perez, M.A. Espinosa, E.Sosa, J. Mendoza, Device for the In Real Time Detection and Location of Faults on Duct Surfaces, Coatings of the Metallic structure Thereof and the Environment About the Same, in Real time.
- Author: **H. Castaneda**, Copyright Supersecorr©. Internal corrosion software modules used for estimation of corrosion rate by speciation, control and mitigation in different oil and gas operation processes and transportation systems, 2008 Reg number TXu 1 580-993.
- Author: **H. Castaneda**, Copyright CPTLM ©. External corrosion software modules for pipeline cathodic protection, current distribution, corrosion control, coatings, 2008, reg. number TXu 1-581-818.
- Author: **H. Castaneda**, Copyright ILIDA©. Integrity management procedures, software's for corrosion management in oil and gas downstream facilities, 2008, reg. number TXu 1-589-609.

Invited Lectures and Courses

Invited Lecture, "Materials selection for oil and gas applications", Aalen University, Germany, December 2013

Iinvited Lecture, "Health monitoring systems and technologies for buried pipelines transporting hydrocarbons", American Gas Association Pittsburgh, PA March 2014

Invited Lecture, CRGI Technical Directors Meeting, Oct 25-27 Las Vegas, "New perspectives on characterizing corrosion science and engineering"

Invited Course, National University of Mexico (UNAM), Mexico City February 2012, "Electrochemical impedance spectroscopy applied to electrochemical cells for energy conversion and storage".

Invited Lecture, DNV-Columbus Ohio, "Electrochemical techniques to survey steel buried structures", June 2009

Invited Lecture, "Material selection for CO_2 corrosion for transportation in supercritical conditions". TMS 2009 ASM/TMS Spring symposium, Materials Challenges for Alternative Energy, GE Global Research Center, May 2009

Invited Lecture, 3rd Mexican workshop on Nanostructure Materials, CINVESTAV Mexico "Design and selection of nano-engineered materials for storage energy biofuels applications", June 2008

Invited Lecture, XVI International Materials Research Congress 2007, Electrochemical "Characterization and modeling applied to sub-micron scales in materials exposed to heterogeneous reactions for energy storage", Symposium 19, Advances in Semiconducting Materials, June 2007

Invited Lecture, "Electrode materials for electrochemical processes, theoretical and experimental design by using electrochemical impedance spectroscopy", Ohio State University, February, 2002

Invited Lecture, "Electrochemical impedance spectroscopy applied to metal-aqueous interface systems" Presentation for United Technologies Corporation East Hartford, Connecticut USA, November, 2000

Invited Lecture, "Electrochemical techniques and deterministic models in electrochemistry applied to metal-aqueous interface systems", Presentation for SIEMENS Co. Lowell Massachusetts, USA, January, 2001

Invited Lecture, "Electrochemical methods applied to metallic coating interfaces", Presentation for Brussels University Vrije Universiteit Brussel, April, 2001.

Invited Lecture, "Monitoring techniques in corrosion engineering"
Chemical School, UNAM (National University of Mexico),October, 1996

Professional Associations

- International Electrochemical Society (2009-to date)
- The Electrochemical Society (From 1999-to date)
- National Association of Corrosion Engineering (From 1995-to date)
- American Chemical Society (From 2011- to date)
- American Society of Materials (From 2011- to date)
- International Corrosion Council (From 2008- to date)
- Member Technical and Research Activities Committee and Courses for Industry ASM, *2001-2004*
- National Association of Researchers Mexico SNI Level I (2007-2013)
- National Association of Researchers Mexico SNI Level II (2014-2017)

- Committee members Advanced Materials Publications Petrotex Society (2013-)

Teaching

The University of Akron

- Advanced Electrochemistry, 4200:696, graduate level course
- Mass and Energy Balances for Corrosion and Chemical Engineering, 4200:200, sophomore level course
- Corrosion I Laboratory, 4250:301 junior level course
- Materials Science for Corrosion Engineering, 4250:121 sophomore level course
- Chemical Computations for Corrosion and Chemical Engineers 4200:121

National Autonomous University of Mexico (UNAM)

- Advanced Corrosion, Graduate Level Course
- Electrochemistry, Junior Level Course
- Corrosion Laboratory, Senior Level Course
- Corrosion and Prevention, Senior Level Course

Professional Service

- Directive Board for the Electrochemical Society –Mexican Section (2013-2015)
- Professional Exams Committee for BS and MS degree at the Autonomous Metropolitan University (UAM), January 2003 to date
- Professional Exams Committee for Postgraduate Exams at the National University of Mexico (UNAM), January 2003 to date
- Committee for PhD studies at The University of Virginia, 2006-to date
- Permanent Committee member for Energy and Reliability Engineering Projects at the National University of Mexico, July 2003 to date
- Chairman of the Symposium STG 30 NACE (2007, 2009, 2011,2012,2013)
- Chairman of the Symposium Electrochemical Society (D3-2006), D2-2014
- Chairman of the International Society of Electrochemistry Symposium for Lithium Batteries, Queretaro Mexico, 2013.
- Journal associate editor Advanced Materials Publications Petrotex Society (2013-)

Reviewer Activities

Journals : Corrosion Science, Solid State Electrochemistry, Applied Electrochemistry, Metals and Alloys, Plos One, Electrochimica Acta, Desalination, Corrosion, Power Sources, Materials and Science and Engineering A, Corrosion Engineering Science and Technology, Electrochemical Society, Chemical Physics, Materials and Design, Metallurgical and Materials Transactions A, Canadian Metallurgical Quarterly, Anti Corrosion Methods, Electrochemical Communications.