Dante Battocchi, PhD, Dr.Eng.
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Education

University of Trento, Trento, Italy 1995–2002
Degree of Doctor, Materials Engineering

North Dakota State University, Fargo ND, USA 2001-2003
M.S., **Polymers and Coatings**

North Dakota State University, Fargo ND, USA 2008-2012
PhD, Materials and Nanotechnologies

Special Interests

- **Materials protection and metal corrosion**
  - **Metal rich primers**
  - **Electrochemical analysis** of corroding systems via Electrochemical Noise Measurements (ENM), Electrochemical Impedance Spectroscopy (EIS), Scanning Vibrating Electrode Technique (SVET)
- **Coatings formulations, Materials Science**
- **Technology management, Technology strategy, Business development**

Technology Transfer

1. ***Mg-rich primer (RF118-139) licensed to Akzo Nobel*** *as a replacement for Chrome containing coating systems:*
   - lab development & commercial scale up
   - actively involved in the patenting process with the NDSU Tech Transfer Office
   - actively involved in the licensing negotiations
2. ***Mg-rich primer (RF118-139) licensed to Elinor Specialty Coatings*** *as a replacement for Chrome containing coating systems:*
   - commercial scale up and commercialization
3. ***RF 141 licensed to Elinor Specialty Coatings*** *as a reversible polymer for art preservation*
   - lab development, commercial scale up and commercialization

Funding awards

Program/Sponsor	Time Period	Amount
AFOSR*	2004-2007	$3,500,000
NDSU-RTSP	2005	$10,000
NDSU-PDC	2006-2007	$35,000
AFRL-DHC*	2004-2007	$3,500,000
ND-ED-COE/CSP*	2007-present	$4,000,000+$8M private sector matching funds
US AFA	2013-2017	$400,000

*Collaborative proposal

Entrepreneurial Activities

Elinor Specialty Coatings LLC 2009-present
Co-founder and Chief Technical Officer

- Technology management and transition from lab to market
- Business development, scale up and manufacturing

Professional Experience

North Dakota State University,
Coatings and Polymeric Materials Department Jan 2016-present
Assistant Professor

- Supervise two graduate students and two post-graduate researchers
- Teach two classes (CPM 486/686 Corrosion and Materials and CPM 487/687 Corrosion Lab)
- *Develop new research efforts*

Current experimental work

- Studies of the oxidation of Aluminum alloys
- Studies of Chrome-free protection of Aluminum and Al-alloys
- Evaluation of novel corrosion inhibitors
- Electrochemical analysis and characterization of protective coatings.
    - Electrochemical Noise Measurements (ENM), Electrochemical Impedance Spectroscopy (EIS), Scanning Vibrating Electrode Technique (SVET)

North Dakota State University, Center for Surface Protection 2006- 2014
Associate Director

- Interact with private sector for research and projects planning
- Write proposals to procure funding for the Center's sustainability
- Plan research projects
- Supervise technical personnel in the execution of research (laboratory technicians and scientists)
- Train technical personnel/students

North Dakota State University,
Coatings and Polymeric Materials Department 2006-present
Adjunct Professor

North Dakota State University,
Coatings and Polymeric Materials Department 2003-2006
Research Associate

- Supervise four research assistants
- Technical manager of Durable Hybrid Coatings Program
- Train students in experimental/testing techniques
- Actively involved in proposal writing for future research projects
- Review manuscripts in metal corrosion and protective coatings journals

NDSU, Polymers and Coatings Department 2001-2003
Research Assistant

- Develop and assemble a new electrode for aluminum alloys emulation and corrosion investigations
- Use electrochemical techniques to evaluate the performances of protective coatings over aluminum substrates

Work experience Italian State Police 1993-1995

Agent

- Accomplish all the duties assigned, pass trainings for public order operations, driving and safety gun handling tests. Attend weekly meetings for service planning and task assignments.

- Manage the daily routine of groups of "agents in training" during their first two months of active service.

Publications (Journals)

1 manuscript recently submitted and currently under review.

"Hydrogen Evolution and Early Blistering from Magnesium-Rich Primers on AA2024-T3"
J. Lin, V. Upadhyay, X. Qi, D. Battocchi, G. P. Bierwagen
Corrosion, 72,3, (2016)

"Localized electrochemical characterization of organic coatings: A brief review"
V. Upadhyay, D. Battocchi, Progress in Organic Coatings 99 (2016) 365–377

"Electrochemical Characterization of Coated Self-Piercing Rivets for Magnesium Applications"
V.Upadhyay, X. Qi, N. Wilson, D. Battocchi, G. Bierwagen, J. Forsmark, R McCune, SAE Int. J. Mater. Manuf. 9 (2016) 187–199.

"Mg Rich Primer-Powder Topcoat coating system for the corrosion protection of Al alloys" J. Lin; C, Orgon; D. Battocchi; G. P. Bierwagen, , Progress in Organic Coatings, 2016 (Accepted).

***"*Hydrogen Evolution and Early Blistering from Magnesium-Rich Primers on AA2024-T3",** *Junren Lin, Vinod Upadhyay, Xiaoning Qi, Dante Battocchi, Gordon P. Bierwagen, Corrosion. 2016;72(3):377-383.*

"Aluminum alloy 2024-T3 protection by magnesium-rich primer with chromate-free metal salts" Bobbi Jo E. Merten, Dante Battocchi, Gordon P. Bierwagen *Progress in Organic Coatings, Volume 78, January 2015, Pages 446-454*

"Characterization of Coatings on Steel Self-Piercing Rivets for use with Magnesium Alloys" R. McCune, J. Forsmark, V. Upadhyay, D. Battocchi, , in: M. V. Manuel, A. Singh, M. Alderman, N.R. Neelameggham (Eds.), Magnes. Technol. 2015.

"The effect of exposure condition on the degradation behavior of magnesium rich coatings"
Rebecca L. DeRosa, Istvan Szabo, Gordon P. Bierwagen, Dante Battocchi, *Progress in Organic Coatings, Volume 78, January 2015, Pages 455-461*

"The determination of critical pigment volume concentration (CPVC) in organic coatings with fluorescence microscopy" Jinhai Wang, Hong Xu, Dante Battocchi, Gordon Bierwagen
Progress in Organic Coatings, Volume 77, Issue 12, Part B, December 2014, Pages 2147-2154

"Analysis of (Zn+Mg) pigment mixtures in Metal –rich corrosion protective primers for Steel" *Dante Battocchi, G.P. Bierwagen, M. Hatzenbeller, L. Fitzgerald, S. Porter, Corrosion, 2012, in press*

"SVET method for characterizing anti-corrosion performance of metal-rich coatingsMaocheng Yan, Victoria J. Gelling, Brian R. Hinderliter, Dante Battocchi, Dennis E. Tallman, Gordon P. Bierwagen, ***"*** *Corrosion Science*, *Volume 52, Issue 8*, *August 2010*, *Pages 2636-2642*

"Embedded Reference Electrode for Potential-Monitoring of Cathodic Protective Systems", Bobbi E. Merten, Dante Battocchi, Dennis Tallman and Gordon Bierwagen, J. Electrochem. Soc., 157, 7, (2010), pp. C244-C247

"Active Metal-Based Corrosion Protective Coating Systems for Aircraft Requiring No Chromate Pretreatment" G. Bierwagen, R. Brown, D. Battocchi and S. Hayes, Progress in Organic Coatings, 67, 2, 2010, 195-208

"Transmission Line Modeling of EIS Data for a Mg-Rich Primer on AA 2024-T3" Kerry N. Allahar, Dante Battocchi, Gordon P. Bierwagen, and Dennis E. Tallman, J. Electrochem. Soc. **157** C95 (2010)

"In situ monitoring of a Mg-rich primer beneath a topcoat exposed to Prohesion conditions" D. Wang, D.Battocchi, S. Balbyshev, K.Allahar, G.Bierwagen, Accepted, Corrosion Science, 2009

"The Use of Mg Alloys as Pigments in Mg-rich Primers For Protecting Al Alloys" H. Xu, D. Battocchi, D E. Tallman and G. P. Bierwagen, Corrosion, 2009, 65, 5

"Thermal Degradation of a Mg-Rich Primer on AA 2024-T3" Kerry N. Allahar, Dante Battocchi, Gordon Bierwagen, and Dennis Tallman ECS Trans. **19** (29), 75 (2009

"Assessment of the corrosion protection of aluminium substrates by a Mg-rich primer: EIS, SVET and SECM study" *Progress in Organic Coatings*, *Volume 63, Issue 3*, *October 2008*, *Pages 260-266*
Alda Simões, Dante **Battocchi**, Dennis Tallman, Gordon Bierwagen

"Modeling of Electrochemical Impedance Data of a Magnesium-Rich Primer" K. Allahar, D. Battocchi, M.Orazem, G. Bierwagen, and D. Tallman. JES, 155, (10) 2008

"SVET and SECM imaging of cathodic protection of aluminum by a Mg-rich coating"
A. M. Simões, D. Battocchi, D. E. Tallman and G. P. Bierwagen Corrosion, Science , 49, 10, (2007)

"The use of multiple electrochemical techniques to characterize Mg-rich primers for Al alloys"
Gordon Bierwagen, Dante Battocchi, Alda Simões, Anthony Stamness and Dennis Tallman
Progress in Organic Coatings, 59, 3, June 2007, 172-178

"***Comparison of testing solutions on the protection of Al-alloys using a Mg-rich primer"***
D. Battocchi, A. M. Simões, D. E. Tallman and G. P. Bierwagen"
Corrosion Science, 48, 8, August 2006, 2226-2240

"Electrochemical behaviour of a Mg-rich primer in the protection of Al alloys"
D. Battocchi, A. M. Simões, D. E. Tallman, G. P. Bierwagen
Corrosion Science,48, 5, May 2006, 1292-1306

"Emulation and study of the corrosion behavior of Al alloy 2024 T3 using a Wire Beam Electrode(WBE) in conjunction with Scanning Vibrating Electrode Technique (SVET)."
Corrosion Science, 47 (2005) 1165-1176

Research presentations/Conference proceedings publications (selected)

"Analysis of (Zn+Mg) pigment mixtures in Metal –rich corrosion protective primers for Steel"
Dante Battocchi, G.P. Bierwagen, M. Hatzenbeller, L. Fitzgerald, S. Porter, NACE 2012, 11-15 March 2012 Salt Lake City, USA

"Electrochemical study of the galvanic interaction of a Mg-rich primer and its Al substrate" Dante Battocchi, Nick Richter, Maochen Yan and Gordon Bierwagen, NACE2010, 14-18 March 2010, San Antonio TX, USA

"The use effect of residual Chromate pretreatment on the electrochemical behavior of a Mg rich primer" Dante Battocchi Kerry Allahar and Gordon Bierwagen, Eurocorr2008, 8-10 September, Edinburgh, Scotland

"The use of embedded sensors to monitor the performances of a Mg rich primer on Al 2024T3"
Dante Battocchi Kerry Allahar and Gordon Bierwagen, Eurocorr2008, 8-10 September, Edinburgh, Scotland

"The use of Mg alloys as pigments in Mg rich primers"
Hong Xu, Dante Battocchi and Gordon Bierwagen, NACE2008, New Orleans, USA

"Examination of Mg-rich coatings based on inorganic binders by EIS"

Gordon Bierwagen, Duhua Wang, Dante Battocchi, Kerry Allahar and Dennis Tallman, EIS2007 Argeles sur mer, France, June 4-8 2007, Keynote speaker

"Particle size influence on the electrochemical behavior of a Mg-rich primer"
Dante Battocchi*, Kerry N. Allahar,G. P. Bierwagen, D. E. Tallman,* EIS2007 Argeles sur mer, France, June 4-8 2007

"**Mg-rich primer for totally Chromate free protective system on Al alloys"**
Dante Battocchi, Gordon Bierwagen, Dennis Tallman, Roger Brown and Mark Zentner, European coating

"**Mg-rich primer for totally Chromate free protective system on Al alloys"**
Dante Battocchi, Gordon Bierwagen, Dennis Tallman, Roger Brown and Mark Zentner, THE NUERNBERG CONGRESS (European coating meeting/expo)7-9 May 2007, Nuremberg/Germany, Invited speaker.

"The use of multiple electrochemical techniques to characterize Mg-rich primers for Al alloys"
Dante Battocchi, G. P. Bierwagen, A. Stamness, D. E. Tallman, A. M. Simoes, COSI2006 (Coatings Science International), 26-30 June 2006, Noordwijk, The Netherlands

"Electrochemical behavior of Mg-rich primer for aircraft alloys"
Dante Battocchi, G. P. Bierwagen, A. Stamness, D. E. Tallman, A. M. Simoes, 1st World congress on Corrosion in the Military, June 2005 Sorrento, Italy, Invited speaker

"Mg-rich primer for chromate free protective systems on Al 2024 and Al 7075"
Dante Battocchi, Gordon Bierwagen, Alda Simões,Anthony Stamness and Dennis Tallman, EuroCorr2005, Lisbon, Portugal 4-8 September 2005

"Quantitative Microscale Studies of Corrosion Protective Coatings Damage Protection"
Dante Battocchi, Gordon Bierwagen, Dennis Tallman, and Jie He, EuroCorr2005, Lisbon, Portugal 4-8 September 2005

Workshops

NDSU Faculty Professional Development	2016
Effective communication	2013
Genuine Leadership	2010
Aircraft Corrosion	2004
Problem solving	2003
Advanced Technology Transfer	2003

Affiliations

NACE
Electrochemical society

Languages

Italian:	Fluent
English:	Fluent
German:	Beginner
Spanish:	Beginner

Hobbies

Sports (Running, soccer, hiking, biking)
Reading