

# Eduardo Mari

M.Sc., P.Eng



1336 Sandhill Drive  
Ancaster ON, L9G 4V5

## EDUCATION

Master's Degree in Materials Science and Engineering (2009)  
State University of New York, Stony Brook, New York, USA

Bachelor's Degree in Materials Engineering (2002)  
Simon Bolivar University, Caracas, Venezuela

## TECHNICAL AND PROFESSIONAL AFFILIATIONS

Technical Committee Member - Canadian Standards Association (CSA) B139:  
Installation Code for Oil-Burning Equipment  
American Society of Materials (ASM). Ontario Chapter Secretary 2013-2014  
National Association of Corrosion Engineers (NACE)  
Professional Engineers of Ontario (PEO)

## PROFESSIONAL EXPERIENCE

Professional materials and metallurgical engineer with over 15 years of forensic investigations and failure analysis experience.

Lead investigator in over 700 failure and forensic investigations. With specialized experience in the cause of failure of a wide variety of consumer property and industrial products. Mechanical and metallurgical failure analysis. Fuel oil failures, spills and code investigations. Piping, Plumbing and HVAC Analysis. Plastic and Polymer Failures. Fire protection system failures.

Responsible for determining root cause of failures related to product, mechanical, plumbing, HVAC, plastics and fire protection systems liability (elaborate)

### July 2016 - Present

#### ***Origin and Cause Incorporated***

Forensic Engineer – Materials and Metallurgy

- Perform mechanical and metallurgical failure analysis investigations on a variety of engineering materials and components to determine the origin and cause of residential, commercial and industrial failures
- Prepare technical reports related to failures involving complex large losses
- Provide litigation technical support to insurance companies, law firms and independent adjusters
- Subject matter expert in fundamental materials characterization, testing and analysis

### 2012 - 2016

#### ***Pario Engineering***

Senior Forensic Engineer - Materials/Metallurgical

- Microbiological induced corrosion (MIC) subject-matter expert
- Fuel oil systems – Failure investigations involving internal and external corrosion, filters, piping and installation deficiencies
- Root cause analysis of fractured/cracked products and components
- Cause and origin investigation of water escapes. Plumbing: investigation of plumbing fitting failures, piping, flexible supply lines among others
- Metallurgical/Materials investigation of metallic and plastic piping and tubing
- Fire suppression systems: Failure analysis of sprinkler systems and compliance
- Metallurgical investigation of components involved in a fire

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## Failure Analyst – Metallurgy/Materials (2012)

### **Acuren Group Inc.**

- Directed and conducted metallurgical projects and failure analysis investigations for various industries, e.g. Oil & Gas, Automotive, Transportation, Power Generation, Pulp and Paper, Manufacturing, Biomedical and more
- Development and management of clients to fulfill their needs for failure analysis and metallurgical projects as well as to identify business opportunities
- Lead and supervised technical laboratory staff towards the successful completion of projects and delivery to clients via written report
- Completed failure analysis proposals for TTC, MOL, OPG and other industries

## 2009 – 2011

### **University of Toronto**

#### **Centre for Advanced Coatings Technologies**

Department of Materials Science and Engineering

Graduate Student (Ph.D.)

- Conducted metallurgical analysis and mechanical testing of novel structural components made from nickel-alloy-foam. These components were being developed for high temperature applications, e.g. heat exchangers, engine combustors and airfoil
- Advanced user of laboratory techniques including: light microscopy, SEM/EDX, hardness, image analysis, XRD, metallography and chemical analysis
- Interacted with industrial partners (Pratt & Whitney Canada, Plasco Energy Group and Centerline Canada) to review project requirements, testing specifications and on-site evaluations
- Provided technical support, guidance and mentoring to junior staff members and interns

## 2006 – 2009

### **Center for Thermal Spray Research**

Stony Brook University, New York

- Developed strain and heat flux sensors to monitor and control the lifetime of special alloy components at high temperatures. Industry visits to complete on-site testing and development of sensors for control of coatings processes in the aerospace industry. Prepared several detailed technical reports on mechanical and thermal properties of coatings.

## 2006

### **Supermetanol (Petrochemical)**

Barcelona, Venezuela (2006)

- Implemented fitness for service and root cause analysis to evaluate in-service components. Participated in the plant's risk based inspection (RBI), integrity maintenance and reliability programs. Lead several material selection processes for new valves, furnaces, tubing and process equipment. Planned, organized and performed inspections, monitored plant equipment and pipelines according to corrosion and flaw detection procedures using NDT techniques.

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2002 – 2005

## **Center for Surface Engineering**

Caracas, Venezuela

- Completed metallurgical failure analysis investigations on failed components resulting in losses in industries that included oil and gas, automotive and aerospace.

## **FURTHER TRAINING AND EDUCATION**

- Plastic Part Failure: Analysis, Design & Prevention, University of Wisconsin-Milwaukee, 2015
- Fire Sprinkler Inspection Training & Certification Program, Oklahoma State University, Stillwater, 2014
- Internal Auditor for ISO/IEC 17025, Canadian Association for Laboratory Accreditation Inc. (CALA), 2013
- Plastics Pipe: Failure Analysis, Environmental degradation mechanisms, Codes and Standards – Jana Laboratories, 2012
- Standard First Aid and CPR Training Certificate – Level C, 2012
- ASNT SNT-TC-1A, Non-Destructive Testing UT-II; MT-II; PT-II, 2005

## **SCHOLARSHIPS**

- International Thermal Spray Association (ITSA), 2010
- Japanese International Cooperation Agency (JICA) – 12 week Non Destructive Testing (NDT) training and certification at CIDESI. UT level II, MT level II, PT level II, RT Level I, Mexico, 2005
- Spanish Agency for International Development Cooperation (AECI) – Ibero-American Materials Technology Meeting, Santa Cruz, Bolivia, 2004

## **PUBLICATIONS AND SPEAKING ENGAGEMENTS**

- Presenting Author – Forensic evaluation of ball valve failures in HVAC recirculation lines of high-rise residential buildings – Materials Science & Technology Conference (MS&T), Pittsburg, PA, 2017
- Presenting Author – Fatigue failures in farming equipment - Ontario Mutual Insurance Association - 2016
- Cause and Origin of Fuel Oil Spills – A forensic Investigation approach with a review of code and regulations, presented to insurance and adjusters in 2015
- Presenting Author – Failure of Braided Wire-Reinforced Flexible Hose due to Pitting and Stress Corrosion Cracking – Materials Science & Technology Conference (MS&T), Montreal, Quebec, 2013
- Invited Speaker – Stress Corrosion Cracking Failure of a Stainless Steel Flexible Water Connector – National Association of Corrosion Engineers (NACE), Corrosion 2013 International Conference, Orlando, Florida, 2013
- *Using Thermal Spray and Laser Micromachining to Fabricate Sensors*, Journal of Thermal Spray Technology, Volume 20, Issue 4 , pp 958-966, 2011
- Presenting Author – *Sensor Fabrication via Thermal Spray and Laser Milling*, International Thermal Spray Conference (ITSC), Las Vegas, 2009
- Presenting Author – Developing Temperature Sensors via Thermal Spray, International Thermal Spray Conference (ITSC), Maastricht, The Netherlands, 2008