



Mitchell Albert, M.A.Sc., E.I.T.

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EXPERT SUMMARY

Mr. Mitchell Albert is an Associate with the Materials and Product Failure team at 30 Forensic Engineering. He holds a Master of Applied Science degree in Materials Engineering from the University of British Columbia, where he developed a functioning prototype for a point-of-care biosensor for diagnostic applications. At 30 Forensic Engineering, Mitchell investigates a diverse range of product failures, mechanical system failures, and equipment failures.

SPECIALIZED PROFESSIONAL COMPETENCIES

- Materials Science and Engineering
- Material and Mechanical Property Characterization
- Microscopy and Fracture Surface Analysis
- Biomaterials and Biomedical Devices
- Electrochemistry and Electrochemical Characterization
- Technical Writing

ACADEMIC BACKGROUND

Master of Applied Science—Faculty of Materials Engineering, University of British Columbia, Vancouver, British Columbia, 2023

Bachelor of Engineering in Materials Engineering and Management, McMaster University, Hamilton, Ontario, 2021

PROFESSIONAL EXPERIENCE

30 Forensic Engineering

Associate, Materials and Product Failure
2023 – Present, Vancouver, BC

- Product liability investigations (property losses and personal injuries).
- Failure analysis of metal components (e.g., fatigue, corrosion, overload, stress failures).
- Plastic and polymer failures.



- Piping and plumbing failures (e.g., over-pressurization, degradation, corrosion).
- HVAC and fire suppression system failures (e.g., fire system piping and sprinkler heads).
- Valve failures (e.g., degradation).
- Seatbelt effectiveness.

University of British Columbia

Graduate Research Assistant, Materials Engineering
2021 – 2023, Vancouver, BC

- Developed a prototype for a point-of-care diagnostic biosensor.
 - Developed laboratory procedures for synthesis and characterization of nanoparticle thin films, photoelectrochemical cells, and DNA hybridization mechanisms.
 - Characterization techniques included optical and scanning electron microscopy, Fourier-transform infrared spectroscopy, nuclear magnetic resonance spectroscopy, ultraviolet-visible light spectroscopy, Mott-Schottky analysis.

Bombardier Aerospace/DeHavilland Aircraft of Canada

Engineering Intern
2019 – 2020, Toronto, Ontario

- Performed failure analysis on in-service DHC DASH 8-400 aircraft.
 - Identified failure mode in mechanical components, such as hardware, skin panels, and hydraulic parts.
 - Used optical and scanning electron microscopy, energy-dispersive X-ray spectroscopy, hardness, and conductivity measurements to identify material and failure mode.
 - Authored reports that summarized the failure root cause and recommended action for internal and/or external use.

Woodbridge Foam Corporation

Engineering Student Research Assistant
2018 – 2018, Woodbridge, Ontario

- Researched methods of reducing and testing for volatile organic compounds in flexible polyurethane foam.
 - Independently developed procedure for foam sample synthesis and volatile organic compound testing using gas-chromatography mass spectrometry and high-performance liquid chromatography.
 - Trained in safe toxic chemical handling that involved cyanates and amine catalysts.

PROFESSIONAL SOCIETIES AND ASSOCIATIONS

- Engineers and Geoscientists of British Columbia (EGBC), Engineer in Training



AWARDS AND ACHIEVEMENTS

- Canadian Graduate Scholarships – Masters Program, The University of British Columbia
- Denton Coates Memorial Scholarship, McMaster University
- Neil Forsyth Prize, McMaster University

PUBLICATIONS

- Bonneville, DB., Albert, M., Arbi, R., Munir, M., Segat Frare, BL., Mirabbas Kiani, K., Frankis, HC., Knights, AP., Turak, A., Sask, KN., Bradley, JDB. (2023). Hybrid silicon-tellurium-dioxide DBR resonators coated in PMMA for biological sensing. *Biomedical Optics Express*.
- Albert, M., Clifford, AM., Zhitomirsky, I., Rubel, O. (2018). Adsorption of Maleic Acid Monomer on the Surface of Hydroxyapatite and TiO₂: A Pathway toward Biomaterial Composites. *Applied Materials and Interfaces*.

ACADEMIC SPEAKING ENGAGEMENTS

- Albert, M. (2023). Multiplexed Nucleic Acid Analysis Using a Linear Polyethyleneimine Modified-Zinc Oxide Photoelectrode. American Chemical Society Spring 2023.
- Albert, M. (2018). Adsorption of Maleic Acid Monomer on the Surface of Hydroxyapatite and TiO₂: A Pathway toward Biomaterial Composites. The Minerals, Metals and Materials Society 2018 Annual Meeting & Exhibition.