OCI Group

Isabella Ferrara

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Materials Engineering

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Isabella is an investigator specializing in Materials Engineering. She has a Bachelor's and Master's degree in Materials Science Engineering from the University of Toronto, with a certificate in Forensic Engineering.

EDUCATION

University of Toronto
Master of Applied Science in Materials Science Engineering
Toronto, Ontario, Canada
2025

University of Toronto
Bachelor of Applied Science in Materials Science Engineering
Toronto, Ontario, Canada
2023

CERTIFICATIONS

- Standard First Aid CPR C & AED, Life's Emergency Training, March 30, 2026

TECHNICAL AFFILIIATIONS

- Member – Society of Plastics Engineers (SPE) – 2026
- Member – American Society for Metals (ASM) – 2025

PROFESSIONAL EXPERIENCE

Materials Engineering
OCI Group
October 2025 - Present

- Conduct on-site and laboratory failure investigations
- Review and interpret applicable codes and standards to support failure mechanism determination
- Produce concise reports with a professional opinion on the cause of the failure
- Collaborate with experts to assist with fire and electrical investigations

Materials Lead
Pratt & Whitney Canada
September 2022 – April 2023

- Re-designed a metal alloy engine part with a polymer composite using SolidWorks for mass reduction
- Mitigated structural limitations via ANSYS topology optimization and metal reinforcements to support localized stress
- Validated the new product's ability to meet pre-defined constraints using FEA

Quality & Safety Researcher
Natural Resources Canada
September 2022 – April 2023

- Analyzed data on natural gas pipelines for conversion to hydrogen transport utilizing ASTM standards to identify gaps
- Synthesized 30+ papers on stress-corrosion-cracking and fatigue using comparison tables to evaluate integrity levels
- Presented critical limitations for the feasibility of repurposing steel pipelines by creating 2 written reports and giving 6 PowerPoint presentations for the purpose of clearly communicating future durability risks

Loss Prevention Consultant
Intact Insurance
May 2023 – August 2023

- Physically inspected the risks for building coverages with $1,000,000+ policies to analyze for risk prevention
- Referenced NFPA, building and electrical codes to develop improvements to mitigate loss and increase safety
- Prepared 35+ concise reports to detail assessment recommendations for underwriter's and insurer's review

Materials Engineer Intern
Celestica
May 2021 – August 2022

- Constructed 5 PCB cross-sections daily and optically inspected the consumer electronics against IPC standards
- Oversaw quality control validations for 3 global aerospace/defense PCB suppliers prior to mass manufacturing
- Improved lab processes by developing 2 Kaizens monthly to improve quality control steps and increase safety

FURTHER TRAINING & EDUCATION

- International Materials, Applications and Technologies Conference, ASM International, September 28 – October 1, 2026
- X-Ray Computed Tomography, Canadian Centre for Electron Microscopy, McMaster University, February 11, 2026
- Working at Heights, Safety First Training Ltd., January 21, 2026
- Practical Fractography, ASM International, December 3-4, 2025
- NFPA 921 Fire Investigator 28hr Training Course, OCI Group Canada Inc., November 24-27, 2025
- Fire Investigation Seminar, Niagara Arson Task Committee, Ontario Municipal Fire Prevention Officers Association, Office of the Ontario Fire Marshal, November 13, 2025
- Fire Service Women Ontario Annual Training Symposium, Fire Service Women Ontario, October 23, 2025

PRESENTATIONS

- ”Material Investigations”, Presenter, Aviva Trial Lawyers, Ontario, 2026
- “Fraudulent Water Claims”, Presenter, Aviva Insurance, Markham, Ontario, 2026
- “Fraudulent Water Claims”, Presenter, OCI Group Canada Inc. National Tour, (Mississauga, Ottawa, Windsor) Ontario, 2026

PUBLICATIONS

Ferrara, Isabella. “Carbon Dioxide Capture using a Multi-Composition Nanoparticulate Bed,” 2025. University of Toronto. Master’s Thesis. TSpace Repository.

X. Pang, S. Xu, **I. Ferrara**, et al., “Toughness Testing for Investigating Hydrogen Embrittlement of Pipe Steels: Tests, Significance, and Limitations,” Proceedings of the 62nd Conference of Metallurgists, COM 2023, Springer Nature, (2023), pp. 493503, https://doi.org/10.1007/978-3-031-38141-6_68.