



EDUCATION

- University of Guelph
 - Bachelor of Science, Chemistry, 2005
 - Master of Science, Chemistry, 2013
- Nipissing University
 - Bachelor of Education, 2006

PRACTICE AREAS

- Chemical Analysis
- Construction Materials Assessment
- Failure Analysis
- Coatings
- Analytical Chemistry
- Microscopy

CONTACT

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EXPERIENCE

Jeffrey Plumridge joined WJE in 2016. His experience includes standardized and specialized analytical testing of diverse materials, including plastics, cement and cementitious materials, coatings and sealants, rubbers, wood, and glass. Mr. Plumridge is the primary analyst for compositional testing of materials by gas chromatography with mass spectrometry and Fourier transform infrared spectroscopy. His work includes accelerated weathering/materials deterioration testing; evaluation of problems with plastics, particularly pipes; flooring distress; concrete admixture analysis; insulated glass unit breakage and failures; and various contamination-related failures of polymeric materials.

REPRESENTATIVE PROJECTS

Chemical Analysis

- Commercial - Western Canada: Evaluation of cracked rubber gaskets
- Commercial - Various Locations, U.S.: Investigation of environmental stress cracking in polycarbonate windows
- Commercial - Various Locations, U.S.: Investigation of blistering in epoxy floor systems
- Commercial - Eastern U.S.: Evaluation of set-retarding fine aggregate
- Commercial - Eastern U.S.: Determination of ethanol content in feedstock
- Residential - Eastern U.S.: Investigation of discoloration of concrete arising from chemical admixtures

Construction Materials Assessment

- Commercial - Southern U.S.: Identification of epoxy haze in newly installed tile floor
- Municipal - Midwest U.S.: Evaluation of malodorous rubber playground material
- Commercial - Eastern U.S.: Evaluation of optical flaws in glazed/mirrored decorative panels
- Industrial - Western Canada: Evaluation of poorly set structural epoxy
- Commercial - Various Locations, U.S.: Investigation of polyisobutylene primary sealant used in insulated glass units

- Industrial - Southwest U.S.: Desaturation and evaluation of built-up roofing following hail events
- Commercial - Various Locations, U.S.: Evaluation of magnesium oxide-based cements for a variety of applications

Failure Analysis

- Residential - Southern U.S.: Investigation of environmental stress cracking of polymeric pipes
- Industrial - Southern U.S.: Investigation of failed glass-reinforced plastic and fiberglass-reinforced plastic structural members arising from osmotic blistering
- Commercial and Residential - Various Locations, U.S.: Investigation of degradation of waterproofing membranes in cementitious environments
- Residential - Chicago, IL: Identification of stains in newly installed decorative and functional stone
- Commercial Facility - Midwest U.S.: Investigation of chemical attack on concrete

Coatings

- Museum - Eastern U.S.: Identification of historic coatings and staining materials
- Sports Arena - Western U.S.: Evaluation of coated cement panels
- Concert Venue - Chicago, IL: Durability evaluation of fluoropolymer coating

Analytical Chemistry

- Conductivity measurements of water, soil, and clay for evaluation of corrosive potential
- Fourier transform infrared spectroscopical analysis of building materials to identify components
- Gas chromatography with mass spectroscopy of building materials to identify components and compositional differences

Microscopy

- Optical microscopy to determine galvanized and polymeric coating thicknesses
- Determination of fracture origins and inclusions present for glass lites
- Analysis of fracture plane of cracked polymeric materials