



#### EDUCATION

- University of Illinois Chicago
  - Bachelor of Science, Biochemistry, 2014

#### PRACTICE AREAS

- Analytical Chemistry
- Laboratory Evaluations
- Construction Materials Testing
- Architectural Testing
- Failure/Damage Investigations
- Corrosion

#### PROFESSIONAL AFFILIATIONS

- American Chemical Society

#### CONTACT

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#### EXPERIENCE

Jesus A. Lagunas specializes in laboratory evaluation and analytical testing of construction materials. His work focuses on the testing of cementitious materials, aggregates, water, metals, coatings, and specialty building products in support of investigations, product evaluations, and research programs.

Since joining WJE in 2018, Mr. Lagunas has supported a wide range of laboratory efforts involving cement chemistry, corrosion testing, durability studies, and service-life research, including freeze-thaw resistance and hygrothermal material property testing. He has served as project manager on select laboratory projects and regularly supports multidisciplinary teams through data analysis and reporting.

Mr. Lagunas has expertise in instrumental chemical analysis, including atomic absorption, ion chromatography, gas chromatography with mass spectroscopy, and Fourier transform infrared spectroscopy (FTIR). In addition, Mr. Lagunas has experience using wet chemical analyses, such as chloride, sulfate, and gravimetric analyses. Additionally, Mr. Lagunas is trained in using hand-held x-ray fluorescence (XRF) and laser-induced breakdown spectroscopy (LIBS) for field investigations.

#### REPRESENTATIVE PROJECTS

##### Analytical Chemistry/Laboratory Evaluations

- Water Analysis: Ion chromatography, atomic absorption spectroscopy, and gravimetric testing of water samples to evaluate material compatibility and potential sources of distress
- Chemical Analysis of Concrete and Mortar: Determination of chloride, sulfate, pH, alkalinity, and cement content to support forensic investigations, quality control programs, and product development
- Corrosion and Metallurgical Support Testing: Laboratory analyses supporting corrosion investigations of embedded metals, piping, and associated coatings
- Embedded Strand Debonding: Extraction, quantification, and analysis of embedded tensioning strands and contaminants for failure investigations

#### Construction Materials Testing

- Rebar Corrosion Resistance Testing: Laboratory testing program evaluating corrosion performance of reinforcing materials
- Cement and SCM Evaluations: Chemical testing of Portland cement and SCMs in accordance with ASTM standards
- Aggregate and Raw Material Testing: Chemical and physical evaluation of aggregates for durability and specification compliance

#### Architectural Testing

- Hygrothermal Material Property Testing: Measurement of moisture movement for incorporation into hygrothermal models of existing and new products
- Dimension Stone Testing: Laboratory evaluations of stone samples, including weathering resistance and resistance to salt crystallization

#### Failure/Damage investigations

- Water Infiltration: Analytical testing of water to determine likely sources of water infiltration
- Soil Testing: Analytical evaluation of soils for determining corrosion potential of embedded elements; testing includes chloride, moisture, sulfate, resistivity, ORP, and pH analysis
- Water Vapor Permeability Testing: WVPT of systems removed from service as well as proposed systems to determine suitability, adherence to specification, and hydrothermal simulation properties