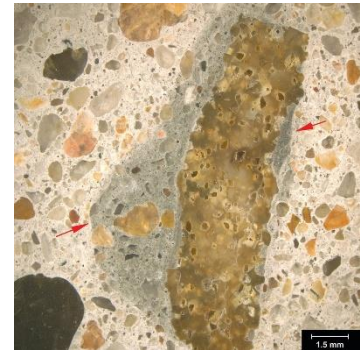


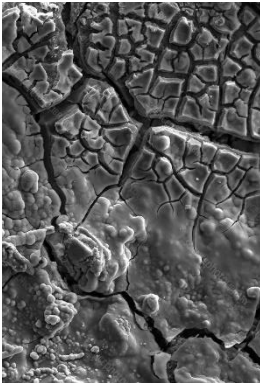
CREATES PETROGRAPHIC ANALYSIS TESTING PROGRAM

CREATES team has a capability of conducting a broad range of petrographic tests, which include but not limited to ***physical testing, optical petrography, and in situ chemical analysis***. Petrographic analysis is typically conducted to do the following:

- Determine Aggregate type, composition, and quality
- Determine presence of dirty/deleterious aggregates
- Characterize cement aggregate reactions
- Determine degree of hydration
- Quantify fly ash and slag cement
- Determine air void content, size, spacing, and distribution
- Determine increase/decrease in Water-Cement ratio
- Characterize aggregate/cement Paste Interface
- Conduct cracking Distress characterization
- Determine extent of Carbonation
- Determine curing compound presence
- Determine relative entrapped air content and/or entrained air void content



Common Petrographic Tests



- ASTM C295: Standard Guide for Petrographic Examination of Aggregates for Concrete
- ASTM C457: Standard Test Method for Microscopic Determination of Parameters of the Air- Void System in Hardened Concrete
- ASTM C856: Standard Practice for Petrographic Examination of Hardened Concrete
- ASTM C1324: Standard Test Method for Examination and Analysis of Hardened Masonry Mortar
- ASTM C1723: Standard Guide for Examination of Hardened Concrete Using Scanning Electron Microscopy

Specialty Testing

- X-Ray Diffraction (e.g., ASTM C 1365 on XRD of cement and clinker)
- Thermogravimetric Analysis (TGA) / Derivative Thermo Gravimetry (DTG) / Differential Scanning Calorimetry (DSC) (e.g., for masonry mortar in ASTM C 1324)
- FTIR Spectroscopy (for organic and inorganic groups)

. For additional information, please contact creates@rowan.edu or Caitlin Purdy at 856-256-5395.



Petrography (Microscope)
ASTM C 295 (Aggregates)
ASTM C 457 (Air void analysis of concrete)
ASTM C 856 (Hardened Concrete)
ASTM C 1324 (Masonry mortar, Stucco)
ASTM C 1723 (SEM-EDS)
ASTM C 1365 X-ray diffraction +XRD
ASTM C 856
Hardened concrete
Composite Core
+ SEM
+ SEM + XRD
ASTM C 295
Alkali-Carbonate Reactivity – Petrography
Petrographic Examination - Crushed stone
Petrographic Examination – Gravel
Petrographic Examination - Slag
Petrographic Examination – Sand
Chemical Tests
ASTM C 1202 (Chloride Permeability)
Physical Tests
ASTM C 42 (Compressive strength)
ASTM C 157 (Length change)
ASTM C 1260 (ASR expansion)
ASTM C 1567 (ASR expansion)
ASTM C 586 (ACR expansion)
ASTM C 642 (Density, Absorption, Voids)
Specialty Tests
X-ray Diffraction (e.g., ASTM C 1365 on XRD of cement and clinker)
Thermal Analysis TGA, DTG, DSC (e.g., for masonry mortar in ASTM C 1324)
FTIR Spectroscopy (for organic and inorganic groups)

Image references

<https://www.forconstructionpros.com/concrete/article/11248215/petrography-what-it-can-and-cannot-do-for-concrete-contractors>

<https://www.sciencesource.com/archive/Damaged-concrete--SEM-SS2676881.html>