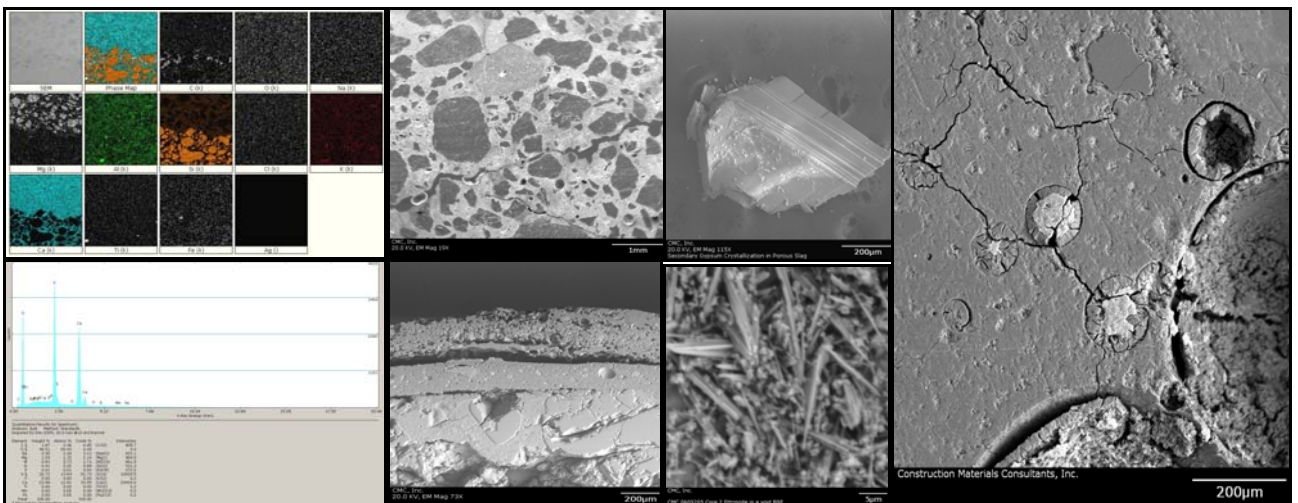


CMC has a state-of-the-art Cambridge Scanning Electron Microscope's "CamScan Series II" SEM, which is equipped with a secondary electron detector, an EDX detector with 4Pi Revolution software for the x-ray microanalysis, and a Robinson backscatter electron detector. The microscope produces high resolution and high magnification digital images of construction materials, detailed microstructural images, morphological images, and conducts analysis of elemental and oxide compositions of a small area of interest. Clinker, cement, concrete, mortar, grout, brick, stone, tile, epoxy, paint, efflorescence deposits - all types of organic and inorganic building and construction materials and metals can be analyzed by this fine equipment.

The SEM includes a large multiported sample chamber fitted with EDS spectrometers offering excellent x-ray geometry with the eucentric 50 by 100 mm motorized stage. The instrument offers 40 Angstroms resolution in SEI mode at 30kV. The EDS attachment from 4Pi with the Revolution software provides excellent elemental analysis, standard-calibrated elemental and oxide composition of a material, simultaneous elemental (dot) mapping of multiple elements over an area, and line scan facilities. The 4Pi revolution software also captures stunning digital images in secondary electron and backscatter electron modes.



**SEM Sample Preparation** - CMC uses Desk II Denton Vacuum cold sputter/etch unit for gold and carbon coating of samples for SEM examination. Desk II gives a uniform, conductive, fine-grained 100Å coating in less than three minutes from pumpdown to venting. After a one-time setup of sputtering time and power and gas bleed rate, the Desk II can sputter in the automatic mode by pushing one button. The advanced design magnetron sputterhead in conjunction with the patented anode grid prevents electron bombardment of the specimen for truly cold sputtering. In the etch mode, the Desk II cleans non-delicate specimens contaminated with molecular films of water and oil to provide a clean substrate for sputtered atoms to adhere to. A removable manual shutter protects the cathode from being coated with etched material. The unit uses interchangeable gold or carbon targets for respective coating. Coating greatly improves the clarity and resolution of images in the secondary electron and backscatter electron images.



Shown are some examples of elemental map, backscatter electron images, secondary electron images, and x-ray elemental spectrum of different concrete samples taken by using the CamScan Series II SEM pictured above.