

39th ICMA Conference Was Successfully Held in Toronto, Canada, April 9-13, 2017

By Dr. Karen Luke

The Thirty–Ninth International Conference on Cement Microscopy has taken place successfully from April 9 to 13, 2017 in Toronto, Canada with delegates from 16 countries over 4 continents in attendance. The conference commenced with a welcome reception co-hosted by the ICMA and Roan Industries. Twenty five technical presentations were given on a diversity of topics related to cement and concrete microscopy, XRD, and other analytical techniques. The keynote speaker, Dr. Chris Rogers, Chair, Technical Committee on Concrete Materials and Construction, Canadian Standards Association provided an informative and anecdotic talk on the [“Pioneers of Concrete Petrography in Canada”](#) Technical presentations covered a diverse range of cement and concrete microscopy topics such as quantitative analysis of slag dissolution, microscopy of amorphous hydrated magnesium carbonate formation, particle size analyses of fly ash, effect of ocean water on hydration, scanning electron microscopy of ASR products, microscopy of an 1860 natural hydraulic cement in concrete, and of an approach to quality, durability and performance of fly ash, microscopic characterization to investigate the beneficial effects of CO₂ utilization in concrete, petrographic observation of 100 year old concrete, and pop-outs caused by calcined dolomite contaminant. Other presentations investigated the impact of testing methodology of sulfate attack, reconstruction of crack plane orientation from 2D core slices after shear stress failure, setting control of calcium aluminate cement, clustering of cementitious particles, potential of trace elements in sourcing cementitious materials, novel metal-silicate nano-dispersions on permeability of concrete, rapid screening method for hydraulic activity of pozzolanic materials and analyzing heat flow and shrinkage by XRD and an in-situ hydration study of calcium sulfo-aluminate cement by ptychographic X-ray computed tomography.

The program also hosted a panel session on Alkali Silica Reaction - a 2017 perspective and a workshop on Cement and Concrete Microscopy. Presentations at both the panel session and the workshop have received overwhelming positive feedback and led to insightful discussions. A presentation was delivered to resurrect the Clinker Sample Exchange Program and to promote microscopic methods. Microscopists, chemists, and QA/QC staff are all welcome and encouraged to participate the program. Please check the ICMA website for [details](#) if you are interested. The conference also included a small exhibition of equipment with Pelcon Materials and Testing ApS, PROTO Manufacturing Inc., PANalytical and Opti-Tech Scientific Inc. (Leica Microsystems). Exhibitors provided informative question and answer discussions during the coffee break networking sessions throughout the conference.

The conference also hosted a tour of Shawcor, BAPS Shri Swaminarayan Mandir Complex and the Humber Arboretum where the ICMA reception was given. At Shawcor delegates were given a descriptive talk on the coatings, testing and the application of coated pipes and shown an impressive subsea simulated vessel for testing deep crude oil pipe coatings. A visit to the Shawcor concrete research lab provided an informative description of the type and method of concrete that can be placed on top of the coating to weigh the pipe down for subsea use. At the BAPS Hindu Temple delegates were shown through the two primary structures, the Haveli built

of intricately hand carved teak wood and the Mandir composed of a spectacular white stone structure. The civil engineers who worked on the BAPs Hindu Temple were on hand to answer any engineering questions posed by the delegates before and after a tour of the temple, in the courtyard of the Haveli. The exterior of the Mandir was composed of limestone from Turkey having a compressive strength of 71MPa whereas the upper floor structure including the interior and roof domes was finished with Carrera marble from Italy with ultimate compressive strength of 130 MPa. More than 95,000 cu. ft. composed of 24,000 individual pieces of hand-carved marble, limestone and sandstone were assembled without reinforcement according to guidelines outlined in ancient Hindu scriptures to survive for hundreds of years. The building foundation is a 1-metre thick Class C fly ash cement concrete (60:40 flyash:cement) raft that was placed in a single pour without steel rebar and had been designed in consultation with P.K. Mehta, a renowned concrete professor from the University of Berkeley, California. In addition the delegates were also given a brief education on the Hindu beliefs and were allowed to witness a Hindu ceremony. The Humber Arboretum is a unique site that is home to the Carolinian bioregion the most diverse ecosystem in Canada and boasts over 1,700 species of plants and animals and includes six kilometers of walking trails. Unfortunately the cold weather did not favor taking to the walking trails, however, the delegates were treated to a buffet of Indian cuisine in the Humber Arboretum Centre and the ICMA awards were presented to the speakers and the EB board. The final day of the conference consisted of a visit to the famous Niagara Falls and delegates had the opportunity to take the time to enjoy the amenities, take some memorable photographs, and purchase mementos.

Activities planned by the Spouse and Guest Committee commenced with an ICMA hosted breakfast on the Monday and to determine the events during the conference. Interesting touristic sites in Toronto were enjoyed by the spouses on the Hop and Go tour. Spouses were also invited to join the delegates at the welcome reception, on the tours of Shawcor and the BAPs Hindu Temple, attend the ICMA hosted reception at the Humber Arboretum and on the day trip to Niagara Falls.

Dr. David Sobransingh and Dr. Arianna LoPresti from MAPEI delivered a personalized welcoming presentation to invite attendees for the Fortieth ICMA Conference to be held in 2018 at MAPEI Americas Headquarters in Deerfield Beach, Florida. Delegates expressed their interest and look forward to attending.

The success of this conference is through the efforts of the ICMA Executive Board under the leadership of the General Chairman, Dr. Arturo G. Nisperos.

April 20, 2017