

**Fifth International Conference on Accelerated Carbonation  
for Environmental and Material Engineering (ACEME 2015)  
Technical Program**

<b>Sunday, June 21, 2015</b>	
<b>5:00PM – 7:00 PM</b>	<b>Meet and Greet Social at Prohibition</b> 503 Columbus Avenue, between West 84 <sup>th</sup> and 85 <sup>th</sup> , NYC 10024

<b>Monday, June 22, 2015—Davis Auditorium (Room 412), Schapiro CEPSR Building</b>		
<b>TIME</b>	<b>EVENT/TOPIC</b>	<b>SPEAKER</b>
<b>8:00AM – 8:30AM</b>	<b>Registration and coffee</b>	
<b>8:30AM – 10:15AM</b>	<b>Principles 1 (Chair: Greg Dipple)</b>	
8:30AM – 9:00AM	<b>Keynote Presentation 1: Carbon Dioxide Sequestration in Wastes: The SAPICO<sub>2</sub> Project</b>	<b>Colin Hills, University of Greenwich</b>
9:00AM – 9:15AM	Enzymes and Catalysts for Accelerated Carbonation and Weathering	Roger Aines, LLNL
9:15AM – 9:30AM	In Situ Studies of “Mineral-CO <sub>2</sub> ” Interactions relevant to Carbon Sequestration	Andrew Chizmeshy, Arizona State University
9:30AM – 9:45AM	The Importance of the Structure and Chemistry of Serpentine Minerals for CO <sub>2</sub> Sequestration through Mineral Carbonation	Alicja Lacinska, British Geological Survey
9:45AM – 10:00AM	Carbon Dioxide Sequestration Using Waste Serpentine	Hsin Wang, National Taipei University of Technology
10:00AM – 10:15AM	Unified Kinetics of Serpentine Dehydroxylation	Jason Mann, University of Sydney
<b>10:15AM – 10:45AM</b>	<b>Break</b>	
<b>10:45AM – 11:45AM</b>	<b>Principles 2 (Chair: Renato Baciocchi)</b>	
10:45AM – 11:00AM	Single and Multi-Step Processes for Flue Gas CO <sub>2</sub> Mineralization Using Thermally Activated Serpentine	Subrahmaniam Hariharan, ETH Zurich
11:00AM – 11:15AM	Kinetics of Magnesium Extraction from Activated Serpentine By Carbonic Acid	Ali Zafaranloo, University of Sydney
11:15AM – 11:30AM	Continuous Process for the Aqueous Carbonation of Serpentinite Leachate Derived from Carbonic Acid	Timothy Oliver, The University of Newcastle
11:30AM – 11:45AM	“CO <sub>2</sub> Energy Reactor” – Integrated Mineral Carbonation: Results and Possible Application	Pol Knops, Innovation Concepts
<b>11:45AM – 1:00PM</b>	<b>Lunch</b>	
<b>1:00PM – 2:30PM</b>	<b>Principles 3 (Chair: Paul Fennell)</b>	
1:00PM – 1:15PM	Low Temperature Magnesite Formation	Greg Dipple, The University of British Columbia
1:15PM – 1:30PM	Waters Associated with the Carbonation of Ultramafic Mine Tailings, Woodsreef Asbestos Mine, Australia	Hans Oskierski, The University of Western Australia
1:30PM – 1:45PM	Novel Metal-Ceramic Composites Formed Via Carbonation	Terence Whalen, Rutgers, The State University of New Jersey
1:45PM – 2:00PM	Ab Initio Thermodynamic Approach to Identify Solid Sorbents for CO <sub>2</sub> Capture Technology	Yuhua Duan, US DOE NETL
2:00PM – 2:15PM	Advances on the Carbon Dioxide (CO <sub>2</sub> ) Reactivity on Lithium and Sodium Ceramics and Its Catalytic Conversion to Added Value Products	Heriberto Pfeiffer, Universidad Nacional Autonoma de Mexico

2:15PM – 2:30PM	Directed Formation of Hydrated and Anhydrous Magnesium Carbonates and Enhanced Water Gas Shift Reaction	Alissa Park, Columbia University
<b>2:30PM – 3:00PM</b>	<b>Break</b>	
<b>3:00PM – 4:30PM</b>	<b>Utilization 1 (Chair: Niall Mac Dowell)</b>	
3:00PM – 3:30PM	<b>Keynote Presentation 2: Carbonate Concrete: A Disruptive Technology for CO<sub>2</sub> Utilization and Construction</b>	<b>Richard Riman, Rutgers, The State University of New Jersey</b>
3:30PM – 3:45PM	Carbonation of Calcium-Silicate-Hydrate Gel: Elucidation of Atomic Structure Mechanisms and Reaction Kinetics Using Pair Distribution Function Analysis	Claire White, Princeton University
3:45PM – 4:00PM	Utilization of Carbonated BOF Slag As Partial Replacement of Aggregate in Cement Mortars	Rafael Santos, Sheridan Institute of Technology
4:00PM – 4:15PM	Utilization of Oil Shale Ash As a Concrete Constituent and Carbon Sink	Mai Uibu, Tallinn University of Technology
4:15PM – 4:30PM	Alkali Activation and CO <sub>2</sub> Curing for BOF Slag Valorization	Milena Morone, University of Rome “Tor Vergata”
<b>4:30PM – 5:00PM</b>	<b>Break</b>	
<b>5:00PM – 6:00PM</b>	<b>Utilization 2 (Chair: Mai Uibu)</b>	
5:00PM – 5:15PM	Carbonation-Granulation of Alkali Activated Steel Slag for CO <sub>2</sub> Storage and Production of Recycled Aggregates	Milena Morone, University of Rome “Tor Vergata”
5:15PM – 5:30PM	Utilization of Magnesium Hydroxy-Carbonate Hydrate (MHCH) Materials Formed By Precipitation of CO <sub>2</sub> in Alkaline Aqueous Solutions	Guillaume Jauffret, University of Aberdeen
5:30PM – 5:45PM	Carbonated Silicate Minerals and Industrial Wastes As Sustainable Construction Materials	Xiaozhou Zhou and Greeshma Gadikota, Columbia University
5:45PM – 6:00PM	Mineral Carbonation and Other Uses of Carbon Dioxide	Evgenia Mechleri, Imperial College London
<b>*6:15PM – 7:00PM</b>	<b>Poster Presentations</b>	

<b>Tuesday, June 23, 2015—Davis Auditorium (Room 412), Schapiro CEPSR Building</b>		
<b>7:00AM – 8:15AM</b>	<b>Closed Session with Scientific Committee, Sindeband East 414 (next to the Auditorium)</b>	
<b>8:00AM – 8:30AM</b>	<b>Registration and coffee</b>	
<b>8:30AM – 10:15AM</b>	<b>CCS 1 (Chair: Sebastian Teir)</b>	
8:30AM – 9:00AM	<b>Keynote Presentation 3: Experimental Investigation of the Pressure of Crystallization of Ca(OH)<sub>2</sub>: Implication for the Reactive-Cracking Process</b>	<b>Peter Kelemen, Columbia University</b>
9:00AM – 9:15AM	Humidity, Temperature and Exposure to Amorphous Silica Control the Stability of CO <sub>2</sub> Storage in Hydrated Mg-Carbonate Minerals	Siobhan Wilson, Monash University
9:15AM – 9:30AM	Critical Role of Water during CO <sub>2</sub> Sequestration in Nickel Mining Residues Under Ambient Conditions	Faical Larachi, Laval University
9:30AM – 9:45AM	Comparison of Mineral Carbonation Behavior of Olivine, Labradorite, Anorthosite and Basalt for CO <sub>2</sub> Storage	Greeshma Gadikota, Columbia University
9:45AM – 10:00AM	Increased Stability of CO <sub>2</sub> -Host Minerals Under Humid Conditions	Bree Morgan, CSIRO Mineral Resources
10:00AM – 10:15AM	Hydrotalcites As a Secondary Carbon Sink in Serpentinities	Connor Turvey, Monash University

10:15AM – 10:45AM	<b>Break</b>	
<b>10:45AM – 12:00PM</b>	<b>CCS 2 (Chair: Andrew Chizmeshya)</b>	
10:45AM – 11:00AM	Alkali-Based Extraction of Mg(OH) <sub>2</sub> from Mg Silicate Minerals Via Solid State Reaction with NaOH	Silvia Madeddu, The University of Sheffield
11:00AM – 11:15AM	Utilization of Chrysotile Mine Tailings and Microbially Accelerated Carbonate Mineral Precipitation Reactions As a Strategy for in Situ Carbon Sequestration	Jenine McCutcheon, The University of Queensland
11:15AM – 11:30AM	CO <sub>2</sub> Sequestration By Mineral Carbonation in Milling Wastes at Thetford Mines (Québec, Canada): Monitoring Experimental Cells Under Atmospheric Conditions	Karl Lechat, Laval University
11:30AM – 11:45AM	In-Situ Carbon Fixation during the Hydrogen Production Via Alkaline Thermal Treatment of Biomass Using Group I and II Hydroxides	Maxim Stonor, Columbia University
11:45AM – 12:00PM	CO <sub>2</sub> Chemisorption and Structural Analyses of the Na <sub>2</sub> (Zr <sub>1-x</sub> Al <sub>x</sub> )O <sub>3-x/2</sub> Solid Solution	Brenda Alcántar-Vázquez, Universidad Nacional Autónoma de México & Universidad Autónoma de Baja California
<b>12:00PM – 1:15PM</b>	<b>Lunch</b>	
<b>1:15PM – 3:15PM</b>	<b>Industrial Waste 1 (Chair: Raffaella Pomi)</b>	
1:15PM – 1:45PM	<b>Keynote Presentation 4: The Role of Particle Size Distribution in CO<sub>2</sub> Sequestration By BOF Slag</b>	<b>Alessandra Poletti, University of Rome</b>
1:45PM – 2:00PM	Understanding Cement Carbonation As a Means of Carbon Dioxide Utilization	Greg Dipple, The University of British Columbia
2:00PM – 2:15PM	Carbon Negative Cement	Phil Renforth, Cardiff University
2:15PM – 2:30PM	Computer Simulation of the Hydration-Carbonation Process of Reactive Magnesia Cement	Mingzhi Wang, University of Cambridge
2:30PM – 2:45PM	Accelerated Carbonation Curing of Lightweight Concrete Masonry Units	Hilal El-Hassan, American University in Dubai
2:45PM – 3:00PM	Carbon Sequestration and Metals Stabilization Characteristics of a Magnesium Oxide-Based Binder	Inseong Hwang, Pusan National University
3:00PM – 3:15PM	Accelerated Carbonation and Performance of Steel Slag Concrete with Pressurized CO <sub>2</sub> Curing	Liwu Mo, Nanjing Tech University
<b>3:15PM – 3:45PM</b>	<b>Break</b>	
<b>3:45PM – 5:15PM</b>	<b>Industrial Waste 2 (Chair: Faical Larachi)</b>	
3:45PM – 4:00PM	Carbon Sequestration Via Steel Slag Accelerated Carbonation: The Influence of Operating Conditions on Process Evolution and Yield	Raffaella Pomi, University of Rome “La Sapienza”
4:00PM – 4:15PM	Mineral Carbonation of Phosphogypsum Waste for Production of Useful Carbonate and Sulfate Salts	Hannu-Petteri Mattila, Åbo Akademi University
4:15PM – 4:30PM	Factors That Influence the Strength Developing during Carbonation of Mineral Waste Compacts	Mieke Quaghebeur, VITO
4:30PM – 4:45PM	Improving Technological Viability of Carbon Sequestration Technologies with Structured Agents and Industrial Wastes	Victor Morales-Florez, University of Seville & Instituto de Ciencia de Materiales de Sevilla (CSIC/US)
4:45PM – 5:00PM	Asbestos Destruction with CO <sub>2</sub>	Rafael Santos, Sheridan Institute of Technology
5:00PM – 5:15PM	Study of CO <sub>2</sub> Capture Capability of Purified Carbide Lime Waste	Encarnacion Ruiz-Agudo, University of Granada
<b>5:15PM – 6:00PM</b>	<b>Break / Campus Tour (Meet in lobby area, outside auditorium)</b>	
<b>6:00PM – 7:00PM</b>	<b>Cocktail Hour (Faculty Room, Low Library)</b>	

7:00PM – 9:00PM	<b>Banquet (Faculty Room, Low Library)</b>	
<b>Wednesday, June 24, 2015—Davis Hall (Room 412), Schapiro CEPSR Building</b>		
8:00AM – 8:20AM	<b>Registration and coffee</b>	
8:20AM – 9:30AM	<b>Industrial Waste 3 (Chair: Tom Van Gerven)</b>	
8:20AM – 8:40AM	<b>Invited talk 1: Mineralization with Capture Integration</b>	<b>Mischa Werner, ETH Zurich</b>
8:40AM – 9:00AM	<b>Invited talk 2: Fixation of CO<sub>2</sub> in Carbonates of Calcium or Magnesium</b>	<b>Hannu-Petteri Mattila, Åbo Akademi University</b>
9:00AM – 9:15AM	High-Gravity Carbonation Process Using Rotating Packed Bed for Carbon Capture and Waste Utilization in Steelmaking Industry	Shu-Yuan Pan, National Taiwan University
9:15AM – 9:30AM	Carbonation-Activated Steel Slag Binder for Cement Replacement and Carbon Utilization	Yixin Shao, McGill University
9:30AM – 9:45AM	<b>Break</b>	
9:45AM – 10:45AM	<b>Industrial Waste 4 (Chair: Greeshma Gadikota)</b>	
9:45AM – 10:00AM	Accelerated Carbonation of Steel Slags Using CO <sub>2</sub> Diluted Sources: CO <sub>2</sub> Uptakes and Energy Requirements	Renato Baciocchi, University of Rome Tor Vergata
10:00AM – 10:15AM	Purification of Slag-Derived Leachate and Selective Carbonation for the Production of High-Quality Precipitated Calcium Carbonate	Yi Wai Chiang, University of Guelph
10:15AM – 10:30AM	Mineral Carbonation of CO <sub>2</sub> with Steel Slags and Waste Concrete	Alia Ben Ghacham, University of Quebec
10:30AM – 10:45AM	Evaluation of Activation Efficiency and Quality of Slag Carbonation	Francesca Trapasso, Institute of Environmental Geology and Geoengineering
10:45AM – 11:00AM	<b>Break</b>	
11:00AM – 12:15PM	<b>Industrial Waste 5 (Chair: Claire White)</b>	
11:00AM – 11:15AM	Leaching Thermodynamics of Oil Shale Waste Key Components	Priit Kallste, Tallinn University of Technology
11:15AM – 11:30AM	Recent Advances in the Development of a New pH Swing Method Based on a Regenerable Precipitant-Solvent System for Metals Recovery and Greenhouse Gas Control	Reydyck Balucan, The University of Queensland
11:30AM – 11:45AM	Carbon Dioxide Sequestration By Accelerated Carbonation of Waelz Slag	Giovanna Cappai, University of Cagliari
11:45AM – 12:00PM	Feasibility of Carbonation of Alkaline Waste Oil Shale Ash in the Rocking-Type Autoclave Reactor	Olga Velts, Tallinn University of Technology
12:00PM – 12:15PM	Trace Metal Mobility during Carbon Mineralisation	Jessica Hamilton, Monash University
12:15PM – 1:30PM	<b>Lunch</b>	
1:30PM – 2:45PM	<b>Pilot Scale 1 (Chair: Martin Stute)</b>	
1:30PM – 1:45PM	Mineral Carbonation of Serpentinite: From the Laboratory to Pilot Scale – the MCI Project	Geoffrey Brent, Orica
1:45PM – 2:00PM	Carbon Dioxide Upcycling to Improve Ready-Mixed Concrete	Sean Monkman, CarbonCure Technologies
2:00PM – 2:15PM	Ultra-Rapid Hardening of Cement By Accelerated Carbonation – Past, Present and Future	Alan Maries, AMSTaR Consultancy
2:15PM – 2:30PM	Demonstration Pilot Plant for the Production of Precipitated Calcium Carbonate (PCC) from Steelmaking Slag and Carbon Dioxide	Arshe Said, Aalto University

2:30PM – 2:45PM	Evidence for Passive Mineral Carbonation from Carbon Isotope Geochemistry in Mine Wastes from the Dumont Nickel Project (Abitibi, Quebec)	Antoine Gras, Université Laval
2:45PM – 3:15PM	<b>Break</b>	
3:15PM – 4:15PM	<b>Pilot Scale 2 (Chair: Geoff Brent)</b>	
3:15PM – 3:30PM	Quantification of Carbon Mineralization with Reactive and Non- Reactive Tracers	Martin Stute, Columbia University
3:30PM – 3:45PM	Negative about Carbon: A Positive Approach	Colin Hills, University of Greenwich
3:45PM – 4:00PM	Case Study for Utilisation of CO <sub>2</sub> from Flue Gases in PCC Production from Slags	Sebastian Teir, VTT Technical Research Centre of Finland
4:00PM – 4:15PM	Utilization of Municipal Solid Waste Incineration (MSWI) Landfill Real Flue Gases Mixed with KR-Slag for CO <sub>2</sub> Sequestration – Pilot Scale Demonstration	Ahn Ji Whan and Thriveni Thenepalli, Korea Institute of Geosciences and Mineral Resources(KIGAM)
4:15PM – 4:30PM	<b>Closing Comments</b>	

**\*Poster Presentations: Monday, June 22 6:15PM – 7:00PM**

Performance Evaluation of High-Gravity Carbonation Process Using Electric Arc Furnace Slag for CO <sub>2</sub> Fixation and Cement Replacement Materials	Chieh-Li Chen, National Taiwan University
Physical and Chemical Controls on Mineral Carbonation in Mine Tailings from the Pore to Field Scale	Greg Dipple, The University of British Columbia
Accelerated Carbonation of Cement Kiln Dust and Lime Kiln Dust for Permanent Storage of CO <sub>2</sub>	Greeshma Gadikota, Columbia University
Dissolution of Thermally Activated Serpentine at Flue Gas Conditions – Near Equilibrium Dynamics	Subrahmaniam Hariharan, ETH Zurich
Utilization of Flue Gases for Waste Paper ONP/OCC/OMG Recycling – Semi Pilot Scale Demonstration	Ahn Ji Whan, Korea Institute of Geosciences and Mineral Resources (KIGAM)
In-situ X-ray Diffraction Carbonation of Cementitious Silicates	Daniel Kopp, Rutgers University
CO <sub>2</sub> Capture in Lithium Cuprate (Li <sub>2</sub> CuO <sub>2</sub> ) at Low Temperatures; Effect of the Water Vapour Addition	Hugo A. Lara-García, Universidad Nacional Autónoma de México
Life Cycle Assessment of the Carbonated MgO Cement- a Green Building Material	Liwu Mo, Nanjing Tech University
Carbon Dioxide Sequestration in the Staten Island Serpentine	Daniel Nothaft, Columbia University
Minimization of Energy Consumption of CO <sub>2</sub> Mineralization Using Recyclable Ammonium Salts	Aimaro Sanna, Heriot-Watt University
The Essential Mineralogical Characteristics of the Raw Materials Used for Mineral Carbonation	Sonja Sjöblom, Åbo Akademi University
Leaching of Residual Steel Slag from a Mineral Carbonation Process	Sebastian Teir, VTT Technical Research Centre of Finland
Rationalizing the Effect of Accelerated Carbonation and Accelerated Ageing on Transition Zone of Cellulose Fibers in Cement Based Composites	Gustavo Tonoli, Universidade Federal de Lavras
Elucidating the CO <sub>2</sub> Chemisorption Process on Sodium Cobaltate	Elizabeth Vera, Universidad Nacional Autónoma de México