EIGHTH CANMET/ACI
INTERNATIONAL CONFERENCE
ON FLY ASH, SILICA FUME, SLAG
AND NATURAL POZZOLANS
IN CONCRETE

FINAL
PROGRAM

MAY 23-29, 2004
TREASURE ISLAND HOTEL
LAS VEGAS, NV, U.S.A.

Issued May 2004
EIGHTH CANMET/ACI
INTERNATIONAL CONFERENCE
ON FLY ASH, SILICA FUME, SLAG
AND NATURAL POZZOLANS
IN CONCRETE

SPONSORED BY

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MAY 23-29, 2004
TREASURE ISLAND HOTEL
LAS VEGAS, NV, U.S.A.
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Sugar Land, TX

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SOCIAL FUNCTIONS

SUNDAY MAY 23, 04
WELCOMING COCKTAIL RECEPTION
18:00 - 19:30
Sponsored by:
U.S. ADVISORY COMMITTEE

MONDAY MAY 24, 04
COCKTAIL RECEPTION
18:00 - 19:30
Sponsored by:
LAFAARGE NORTH AMERICA INC.

TUESDAY MAY 25, 04
COCKTAIL RECEPTION
18:00 - 19:30
Sponsored by:
U.S. ADVISORY COMMITTEE
and
CANMET/ACI INTERNATIONAL CONFERENCE ORGANIZING COMMITTEE

TUESDAY MAY 25, 04
DINNER
Honouring
DR. GEORGE C. HOFF
19:30 - 22:00
- TICKETS $40.00 U.S. -

WEDNESDAY MAY 26, 04
COCKTAIL RECEPTION
18:00 - 19:30
Sponsored by:
U.S. ADVISORY COMMITTEE
Please join your colleagues and friends for the Awards Banquet on Wednesday evening, May 26, 2004. At the Banquet, we will be honoring, and presenting awards to, the following internationally recognized experts who have made outstanding contributions in the general area of supplementary cementing materials.

**J. Deja and J. Malolepszy**  
Technical University of Mining and Metallurgy  
Krakow, POLAND

*Citation:* Sustained and outstanding research in the broad area of supplementary cementing materials.

**J.P. Desai**  
Gujarat Ambuja Cements Ltd.  
Ahmedabad, INDIA

*Citation:* Pioneering the use of HVFA concrete pavements in India.

**D.D. Higgins**  
Cementitious Slag Makers Association  
Caterham, Surrey, U.K.

*Citation:* Sustained and outstanding contributions towards the development and use of GGBFS in the U.K.

**S.I. Pavlenko**  
SSUI, Novokuznetsk, RUSSIA

*Citation:* Sustained and outstanding contributions towards the development and use of cementless slag concrete in Russia.

**B.W. Ramme**  
We Energies, Milwaukee, WI, U.S.A.

*Citation:* Pioneering the development of new technologies for the use of fly ash in concrete.
CHAIRPERSONS’ AND SPEAKERS’ BREAKFAST

On the day of your session, you are asked to attend a breakfast meeting at the conference hotel at 7:00 a.m. Exact location of the meeting will be available at the registration desk. Please ensure you are there.

THURSDAY, MAY 27, 04
19:30 - 22:00
DINNER
honouring
Distinguished Prof. V. Ramakrishnan
S.D. School of Mines and Technology
Rapid City, South Dakota

for his outstanding and sustained contributions to concrete technology over the past 40 years, and his active support of CANMET/ACI International Conferences.

Tickets: $40.00 U.S.
SPECIAL EVENT

TECHNICAL VISIT TO THE
HOOVER DAM
SATURDAY MAY 29, 2004

Tickets: $50.00 U.S.

MONDAY, MAY 24, 04

OPENING CEREMONY
08:45 - 09:00
INTRODUCTORY REMARKS:

V.M. MALHOTRA, Chairperson
Committee for the Organization of CANMET/ACI
International Conferences
(ACI Council)

T.R. NAIK, Chairperson
U.S. Advisory Committee

OPENING PLENARY SESSION
09:00 - 12:30

CHAIRPERSON: T.R. Naik
University of Wisconsin – Milwaukee
Milwaukee, WI, USA

- Optimization of Silica Fume, Fly Ash and
  Amorphous Nano-Silica in Superplasticized High-
  Performance Concrete
  P M. Collepardi, Politecnico di Milano
  Milano, ITALY
  S. Collepardi and R. Troli, ENCO
  Spresiano (TV), ITALY
  U. Skarp, Eka Chemicals, Bohus, SWEDEN

-7-
• Macro- and Micro-Cell Corrosion of Steel Bars in Cracked Concrete Made with Various Cements
P T.U. Mohammed, H. Hamada and H. Yokota
Port and Airport Research Institute
Yokosuka Shi, JAPAN

• Greener Concrete - The CO₂ Case - What are the Options?
S P. Jahren
P.J. Consult A/S, Hvalstad, NORWAY

COFFEE BREAK: 10:30 - 11:00

OPENING PLENARY SESSION (CONT’D)
CHAIRPERSON: M. Collepardi
Politecnico di Milano
Milano, ITALY

• Evaluation of Test Methods for Determining the Resistance of Concrete to Chloride-Ion Penetration
P L. Jiang, Hohai University, Nanjing, CHINA
M.H. Zhang, National University of Singapore
SINGAPORE
V.M. Malhotra, CANMET/NRCan
Ottawa, ON, CANADA

• Fast-Track Concrete Construction Using Cement Replacement Materials
The University of Liverpool, Liverpool, U.K.

• High-Strength Self-Compacting Concrete With Fly Ash: Development and Utilization
P R. Gettu, L. Aguilló and A. Josa
Universitat Politècnica de Catalunya
Barcelona, SPAIN
P.C.C. Gomes, University of Alagoas
Maceio, BRAZIL

LUNCH BREAK: 12:30 - 14:00
SESSION 1: FLY ASH
CO-CHAIRS:
J. Wolsiefer
Norchem Inc.
Fort Pierce, FL, U.S.A.
and
M.H. Zhang
National University of Singapore
SINGAPORE

- Effect of the Superplasticizers Family on the Properties of High Performance Mortars Incorporating Various Amounts and Types of Fly Ash
S P.C. Nkinamubanzi and N. Bouzoubaâ
ICON/CANMET/NRCan
Ottawa, ON, CANADA

SESSION 2: SILICA FUME
CHAIRPERSON: P. Jahren
P.J. Consult A/S
Hvalstad, NORWAY

- Influence of Silica Fume on the Rheology of Cementitious Paste
P H. Vikan and H. Justnes
SINTEF Civil and Environmental Engineering Cement and Concrete
Trondheim, NORWAY

- Thirteen-Year Pozzolanic Interaction Between Portland Cement and silica Fume in Concrete
S B. Persson
Lund Institute of Technology
Lund, SWEDEN

SESSION 3: SLAG
CHAIRPERSON: R. Gettu
Universitat Politècnica de Catalunya
Barcelona, SPAIN

- Factors Affecting the Autogenous Shrinkage of Ground Granulated Blast-Furnace Slag Cement Concrete
P J. Aldred, GHD Pty Ltd.
Perth, W.A., AUSTRALIA
S.-N. Lim
Formerly of National University of Singapore, SINGAPORE

- The Activation of C-, Class F-Fly Ash and Blast Furnace Slag Using Geopolymerization
P H. Xu, G.C. Lukey and J.S.J. van Deventer
The University of Melbourne
Victoria, AUSTRALIA
- Use of Municipal Solid Waste Incineration (MSWI) Fly Ash for Manufacturing Ecological and Energy Saving Cements
  P W. Luhowiak, E.H. Kadri and A. Lefevre
  Université de Cergy-Pontoise
  Cergy-Pontoise, FRANCE
  M. Petruk and K. Sobol
  Technical University of Lviv
  Lviv, UKRAINE

- Mercury Controls on Power Plants: Potential Impacts on Fly Ash Use in Concrete
  Ohio State University
  Columbus, OH, U.S.A.
  D.M. Golden
  Electric Power Research Institute
  Palo Alto, CA, U.S.A.

- Do Silica Fume Agglomerates Cause ASR-Related Expansion?
  S M.C.G. Juenger and J.H. Ideker
  The University of Texas at Austin
  Austin, TX, U.S.A.
  C.P. Ostertag
  University of California
  Berkeley, CA, U.S.A.

- Early Age Strength Development at Low Temperatures in Concrete with Mineral Additions--Efficiency Coefficients for Slag and Silica Fume
  S M. Lundgren, SP Swedish National Testing and Research Institute
  Borås, SWEDEN

- New Silica Fume Standard Reference Material
  J. Wolsiefer, G. Gapinski and R. Plotria
  Norchem Inc., Fort Pierce, FL, U.S.A.

- Strength Development, and Temperature Rise in High-Volume Fly Ash and Slag Concretes in Large Experimental Monoliths
  P M. Rivest, Hydro Quebec
  Montreal, QC, CANADA
  N. Bouzoubaa and V.M. Malhotra
  ICON/CANMET/NRCan
  Ottawa, ON, CANADA

- Study of the Open-Hearth Slags from the “KSC Steel” Company: Development of the Technology for Processing Slags into Composite Structural Materials
  S I. Pavlenko, N.M. Kulagin, S.I. Merkulova and N.V. Zakharova
  SSUI, Novokuznetsk, Russia
  N.S. Anashkin and M.A. Usov
  Steel KSC Ltd., Novokuznetsk, Russia
  Y.G. Avvakumov, ICS&M, SBRAS
  Novokuznetsk, Russia

COFFEE BREAK: 15:30 - 16:00

- 11 -
### SESSION 4: GENERAL

**CHAIRPERSON:** B. Persson  
Lund Institute of Technology  
Lund, SWEDEN

- **Effect of Variability of High-Calcium Oil Shale Fly Ash on the Compressive Strength of Concrete Like Building Units**  
  *S. Freidin and L. Gillerman*  
  Ben-Gurion University of the Negev  
  Sede-Boker Campus, ISRAEL

- **Properties of High Volume Fly Ash Concrete Containing an Alkali Activator**  
  *K. Kawai, P. Jariyathitipong, R. Sato and S. Tsuchida*  
  Hiroshima University  
  Higashi-Hiroshima, JAPAN

### SESSION 5: GENERAL

**CHAIRPERSON:** T.C. Holland  
Consulting Materials Engineer  
Mantua, Ohio, USA

- **Evaluation of Zeolite-Bearing Tuffs as Pozzolanic Addition for Blended Cements**  
  *P. B. Liguori, D. Caputo and C. Colella*  
  Università degli Studi di Napoli  
  Federico II, Naples, ITALY  
  *M. Marroccoli*  
  University of Basilicata  
  Potenza, ITALY

- **Utilization of pH Profiles to Assess the Resistance of Concretes to Carbonation**  
  *S. D. McPolin, P.A.M. Basheer, A.E. Long, K. Gratton and T. Sun*  
  Queen’s University of Belfast  
  Belfast, N. IRELAND

- **Use of Slag Gravel in Roller-Compacted Concrete: A Case Study**  
  *H. Ghassemi, M. Shekarchi and M. Ghalibafian*  
  University of Tehran, Tehran, IRAN

- **Ground Granulated Blast-Furnace Slag Based Cementing Materials Activated with Alkaline Waste Water**  
  *P. R. Sersale*  
  University of Naples, Naples, ITALY  
  *G. Frigione*  
  University of Calabria  
  Arcacavata of Rende (CS), ITALY
- Influence of Moist Curing on Strength Development of High-Strength Concrete Using Fly Ash
  P. F. R. Wu, Y. Masuda and S. Nakamura
  Utsunomiya University
  Utsunomiya, JAPAN

- Adiabatic Temperature Rise of Fly Ash Concrete
  S. K. Kokubu, A. Ueno and K. Uji
  Tokyo Metropolitan University
  Tokyo, JAPAN

- Silica Fume in a Marine Environment: 23 Year Experience
  S. P. Fidjestol, Elkem ASA Materials
  Kristiansand, NORWAY
  H. Justnes, SINTEF
  Trondheim, NORWAY

  P. J. Payá, J. Monzó, M.V. Borrachero and M. Bonilla, Universidad Politécnica de Valencia, Valencia, SPAIN
  S. Velázquez, Universidad Panamericana Campus Guadalajara, Jalisco, MEXICO

- Compressive Strength of Mortars Due to Pozzolanic Reaction of Fly Ash
  P. R. Cheerarot
  Mahasarakham University
  Mahasarakham, THAILAND
  J. Tangpagasit and C. Jaturapitakkul
  King Mongkut's University of Technology, Bangkok, THAILAND

- Environment-Friendly Block Made from Steel Slag
  P. H. Matsunaga, F. Kogiku, M. Takagi and K. Tanishiki
  JFE Steel Corporation
  Hiroshima, JAPAN
  M. Nakagawa
  Nippon Steel Corporation
  Hiroshima, JAPAN
SYMPOSIUM IN HONOR OF
Dr. George C. Hoff

INTRODUCTORY REMARKS:
V.M. MALHOTRA, Chairperson
Committee for the Organization of CANMET/ACI
International Conferences
(ACI Council)

T.C. LIU
U.S. Army Corps of Engineers
Washington, DC, U.S.A.

CHAIRPERSON: J.S. Pierce
Bureau of Reclamation
Denver, CO, U.S.A.

- Applications of High-Strength Concrete in North America
  H.G. Russell, Engineering Consultant
  Glenview, IL, U.S.A.

- Durability Design of Concrete Structures
  K. Sakai, Kagawa University, Takamatsu, JAPAN
  M. Boulfiza, University of Saskatchewan
  Saskatoon, SK, CANADA

- Offshore Concrete Structures – Norwegian Experience and the Legacy
  P. Fidjestol, Elkem ASA Materials
  Kristiansand, NORWAY
  J. Moksnes, Private Consultant, NORWAY
  T.O. Olsen, Olav Olsen Design Firm NORWAY

- Monitoring Concrete Setting and Hardening when Slip-Forming Offshore Platforms
  R. Elimov, Exxon Mobil Production Company
  Houston, TX, U.S.A.
  P.C. Aitcin, Universite de Sherbrooke
  Sherbrooke, QC, CANADA

COFFEE BREAK: 10:30 - 11:00
TUESDAY, MAY 25, 04, 11:00-12:30

SYMPOSIUM IN HONOR OF
Dr. George C. Hoff (Cont'd)

CHAIRPERSON: P. Seabrook
Levelton Engineering Ltd.
Richmond, BC, CANADA

- Brief Review of Development of Geopolymer Concrete
  D. Hardjito and W. Mandira
  Catholic University, Kupang, INDONESIA
  S.E. Wallah and D.M.J. Sumajouw
  Sam Ratulangi University, Manado, INDONESIA
  B.V. Rangan, Curtin University of Technology
  Perth, AUSTRALIA

- Use of Multiple Cementitious Materials in Concrete Mixtures at Corps of Engineers Projects
  B.D. Neeley, A.A. Bombich and B.H. Green
  U.S. Army Engineering Research and Development Center
  Vicksburg, MS, U.S.A.

SPECIAL PANEL DISCUSSION:
ASR OR DEF? WHICH IS THE LESSER EVIL?

CHAIRPERSON: S. L. Sarkar
Texas A&M University
College Station, TX, U.S.A.

PANELISTS:

R. Hill
Boral Material Technologies
San Antonio, TX, U.S.A.

M. Collepardi
Politecnico di Milano
Milano, ITALY

M.A. Berubé
Laval University
Quebec, QC, CANADA
● Innovative Design and Construction of a 50m Span Footbridge Using Reactive Powder Concrete
S. Ikeda, Yokohama National University
Yokohama, JAPAN
Y. Tanaka, Taisei Corporation
Tokyo, JAPAN
Y. Shimoyama, Taiheiyo Cement Corporation
Tokyo, JAPAN
T. Kobayashi, Maeta Concrete Industry Ltd.
JAPAN

● The Use of High-Performance Concrete in Concrete Pavements
S.W. Forster, Federal Highway Administration
McLean, VA, U.S.A.

LUNCH BREAK: 12:30 - 14:00
SESSION 7: GENERAL
CHAIRPERSON: B. W. Ramme
We Energies
Milwaukee, WI, U.S.A.

- Influence of Co-combustion on the Quality of Coal Fly Ash
  P A. J. Sarabér, KEMA
  Arnhem, NETHERLANDS
  J. W. van den Berg, Vliegasunie
  Nieuwegein, NETHERLANDS

- Mechanical Properties of High-Performance Concrete with Fly Ash
  S A. Camões, B. de Aguiar and S. Jalali
  University of Minho
  Guimarães, PORTUGAL
  P. Rocha, Superior School of Technology and Administration
  Viana do Castelo, PORTUGAL
  R. Delgado, University of Porto
  Porto, PORTUGAL

SESSION 8: HOFF SYM. (Cont’d)
CHAIRPERSON: V. Sirivivatnanon
CSIRO Manufacturing & Infrastructure Technology, North Ryde, AUSTRALIA

- Crack Growth Resistance of Fiber Reinforced Concrete at High Strain-Rates
  N. Banthia and V. Bindiganavile
  University of British Columbia Vancouver, BC, CANADA

- Cracking Tendency of HSC: Tensile Strength and Self Generated Stress in the Period of Setting and Early Hardening
  T.A. Hammer
  SINTEF Civil and Environmental Engineering, Cement and Concrete,
  Trondheim, NORWAY
  O. Bjøntegaard
  The Norwegian University of Science and Technology (NTNU)
  Trondheim, NORWAY

SESSION 9: GENERAL
CHAIRPERSON: K. Sakai
Kagawa University
Kagawa, JAPAN

- Properties of Cast-Concrete Products Made with FBC Ash and Blends of FBC Ash and Wet-Collected Coarse Class F Fly Ash
  S T. R. Naik, R. N. Kraus and Y.M. Chun
  University of Wisconsin-Milwaukee
  Milwaukee, WI, U.S.A.
  F. Botha, Illinois Clean Coal Institute
  Carterville, IL, U.S.A.

- Advanced Multi-Product Coal Ash Processing Technology
  S T. L. Robl and J. G. Groppo
  University of Kentucky
  Lexington, KY, U.S.A.
  K. Tapp, LG & E Energy, Inc.
  Louisville, KY, U.S.A.
  M.L. McCabe
  Cemex Inc.
  Malver, PA, U.S.A.
- Activation of Fly Ashes: A General View
  P A. F.-Jiménez and A. Palomo
  Eduardo Torroja Institute (CSIC) Madrid, Madrid, SPAIN

- Precast Elements Made of Alkali-Activated Fly Ash Concrete
  S A. Palomo, A. F.-Jiménez and C.L. Hombrados
  Eduardo Torroja Institute (CSIC) Madrid, SPAIN
  J.L. Lleyda, PRAINSA-ALVISA Madrid, SPAIN

- Strength Development of Concrete Containing Fly Ash and its Optimum Use in Concrete
  S A. Öner, Kocaeli University Kocaeli, TURKEY
  S. Akyüz and H. Yıldırım
  Istanbul Technical University Istanbul, TURKEY

- Performance of Marine Concrete in Atlantic Canada
  T.W. Bremner
  University of New Brunswick Fredericton, NB, CANADA

- Performance Characteristics of 3D and 2D Reinforced Basalt Fiber Concrete Composites
  V. Ramakrishnan and R.K. Panchalan
  South Dakota School of Mines and Technology Rapid City, SD, U.S.A.

- Evaluation of ASR Resistance of Fly Ash-Slag Combinations Using the Modified ASTM C 1260 Test Method
  P C.S. Shon, D.G. Zollinger and S. Sarkar
  Texas A&M University College Station, TX, U.S.A.

- Performance of a new Supplementary Cementitious Material in Combination with Chemical Admixtures
  P B. Christensen, F. Ong and S. Somerville
  Degussa Construction Chemicals Americas, Master Builders, Inc. Cleveland, OH, U.S.A.

COFFEE BREAK: 15:30 - 16:00
SESSION 10: GENERAL
CHAIRPERSON: J. Payá
Universidad Politécnica de Valencia, Valencia, SPAIN

- High-Calcium Coal Fly Ash as Raw Material for Synthesizing New Low-Energy Cements
  P S. GoñI and A. Guerrero
  Eduardo Torroja Institute (CSIC)
  Madrid, SPAIN
  M.P. Lorenzo, Universidad de S. Pablo (CEU), Madrid, SPAIN
  A. Moragues, Universidad Politechnica de Madrid
  Madrid, SPAIN
  I. Campillo and J.S. Dolado
  Centro Tecnologico LABEIN
  Bilbao, SPAIN

- Automated Methods for Fly Ash Particle Characterization
  S W. Bumrongjaroen and R. A. Livingston
  Federal Highway Administration
  McLean, VA, U.S.A.

TUESDAY, MAY 25, 04, 16:00 - 17:30

SESSION 11: HOFF SYM. (Cont’d)
CHAIRPERSON: H. Justnes
SINTEF Civil and Environmental Engineering Cement and Concrete, Trondheim, NORWAY

- Some Thoughts on Silica Fume and High-Performance Concrete
  T.C. Holland
  Consulting Materials Engineer
  Mantua, Ohio, U.S.A.

- Specific Transport Phenomena in Lightweight Aggregate Concrete – Internal Curing and Chloride Penetration
  K. van Breugel
  Technical University of Delft
  Delft, NETHERLANDS

SESSION 12: GENERAL
CHAIRPERSON: M.D.A. Thomas
University of New Brunswick
Fredericton, NB, CANADA

- Anti-Solidification Technology for Fine Aggregate from Blast-Furnace Slag
  P H. Mitsufuji, C. Yoshizawa
  T. Takahashi and M. Kinoshita
  Kokan Mining Co., Ltd.
  Fukuyama-city, JAPAN

- Compressive Strength and Leachate Characteristics of New Green CLSM with Eco-Cement and Melted Slag from Municipal Solid Waste
  P T. Horiguchi and N. Saeki
  Hokkaido University
  Sapporo City, JAPAN
• The Use of Beneficiated and Other Fly Ash as Components of Cement in Concrete
  
  P  J. B. Newman
  Imperial College London
  London, U.K.
  P. L. Owens, Industrial Consultant
  Tring, U.K.

• Curing Temperature Effects on High-Performance Concrete
  T.R. Naik F. Canpolat and Y. Chun
  University of Wisconsin – Milwaukee
  Milwaukee, Wisconsin, U.S.A.

• The Influence of Slag and Fly Ash on the Carbonation of Concretes
  
  P  M. Collepardi, Politecnico di Milano,
  Milano, ITALY
  S. Collepardi, J.J.O. Olagot and
  F.Simonelli
  ENCO, Spresiano (TV), ITALY

• Effects of Replacement Ratio and Curing Condition on Properties of Concrete Incorporating Blast-Furnace Slag
  
  P  K. Uji, D. Kwak and K. Kokubu
  Tokyo Metropolitan University
  Tokyo, JAPAN
  K. Ono, Japan Highway Public Corporation, Tokyo, JAPAN

• Effect of Gypsum Content in Cement on Autogenous Shrinkage of Portland Blast-Furnace Slag Cement Concrete
  
  P  H. Tsuruta and H. Matsushita
  Kyushu University, Fukuoka, JAPAN
  K. Harada and T. Goto
  Ube-Mitsubishi Cement Research Institute Corporation
  Kitakyushu, JAPAN
SESSION 13: SUPPLEMENTARY CEMENTING MATERIALS

CHAIRPERSON: P.R. Gupta
Thornton Tomasetti Engineers
New York, NY, U.S.A.

- Comparative Field and Laboratory Investigations on the Use of Supplementary Cementing Materials (SCMs) to Control Expansion Due to ASR in Concrete
  B. Fournier, ICON/CANMET/NRCan
  Ottawa, ON, CANADA

- Production and Use of Supplementary Cementing Materials in Canada and the Resulting Impact on Green Gas Emissions Reduction
  S. G. J. Venta, Canadian Portland Cement Association, Ottawa, ON, CANADA
  N. Bouzoubaâ and B. Fournier
  ICON/CANMET/NRCan
  Ottawa, ON, CANADA

SESSION 14: CORROSION/ACID RESISTANCE

CHAIRPERSON: J.N. Ward
ISG Resources
South Jordan, UT, U.S.A.

- Strength and Corrosion Protection of Silica Fume Concrete Containing Fly Ash, and Calcium Nitrite Inhibitor or both
  P. Montes, Grupo de Construccion del CIIDIR - IPN - Unidad Oaxaca
  Oaxaca, MEXICO
  T.W. Bremner, University of New Brunswick
  Fredericton, NB, CANADA

- Evaluation of Acid Resistance of Contemporary Concretes
  P. R. Munn, Z.-T. Chang and M. Marosszeky
  University of NSW
  Sydney, AUSTRALIA
  X.-J. Song, Shandong University of Science and Technology
  P.R. CHINA

SESSION 15: SPONSORED BY U.S. ADVISORY COMMITTEE

CHAIRPERSON: T. Jansen
WE Energies
Milwaukee, WI, U.S.A.

- National Specifications for Fly Ash in Pavement Applications: A Recommended Framework
  R. Deju, ISG Resources
  South Jordan, UT, U.S.A.

- Utilization of Self Cementing Class C Fly Ash in Cold In-place Recycled Asphalt Concrete Pavements
  B.W. Ramme, WE Energies
  Milwaukee, WI, U.S.A.
  H. Wen, Bloom Consultants
  Milwaukee, WI, U.S.A.
  T.R. Naik, and R. N. Kraus
  UWM Center for By-Products Utilization
  Milwaukee, WI, U.S.A.
- Durability of Concrete Containing Supplementary Cementing Materials Under Hot and Aggressive Environments
  A.A. Ramezanianpour  
  Amirkabir University of Technology  
  Tehran, IRAN
  A.R. Pourkhorshidi  
  Building and Housing Research Center  
  Tehran, IRAN

- The Role of Fine Supplementary Binder in High Performance Fiber-Reinforced Cementitious Composites
  P. D. Hesselbarth and J. Kaufmann  
  EMPA (Swiss Federal Institute for Materials Testing and Research)  
  Duebendorf, SWITZERLAND

- Study of the Leaching Behavior of Lean Concrete for Road Sub-base: The Use of a Tank Test with Demineralized Water and Quantification of Heavy Metal Content in Leachates
  S. A.-M. Marion, M. De Lanève and  
  A. De Grauw, Centre de Recherches Scientifiques et Techniques de l’Industrie Cimentière Belge (CRIC)  
  Brussels, BELGIUM

- Acid and Sulfate Resistance of Portland Cement-Natural Zeolite Mortar
  I. Janotka, Institute of Construction and Architecture, Slovak Academy of Sciences, Bratislava, SLOVAKIA
  A. Ray, University of Technology, Sydney NSW, AUSTRALIA
  S. Mojumdar, Mount Allison University Sackville, NB, CANADA

- Use of High-Carbon Fly Ash in Manufacturing Conductive CLSM and Concrete
  T.R. Naik, R.N. Kraus, Y.M. Chun and R. Kumar  
  UWM Center for By-Products Utilization  
  Milwaukee, WI, U.S.A.
  B.W. Ramme  
  WE Energies  
  Milwaukee, WI, U.S.A.

- Life Cycle Inventory of Slag Cement Concrete
  M.L. Marceau and M.C. VanGeem  
  Construction Technology Laboratories Inc., Skokie, IL, U.S.A.
  J.R. Prusinski, Slag Cement Association  
  Sugar Land, TX, U.S.A.

COFFEE BREAK: 10:30 - 11:00
SESSION 16: CONCRETE DURABILITY
CHAIRPERSON: H.P.E. Lim
Consultant
Katong, NY, U.S.A.

- Sustainable Development and Durability of Self-Compacting Concretes
  P. L. Coppola, T. Cerulli and D. Salvioni, Mapei
  Milan, ITALY

- Mechanical Properties and Durability of High Strength Concrete containing Rice Husk Ash
  P. H.B. Mahmud and E. Majuar
  University of Malaya
  Kuala Lumpur, MALAYSIA
  M.F.M. Zain and N.B.A.A. Hamid
  National University of Malaysia
  Selangor, MALAYSIA

SESSION 17: GENERAL
CHAIRPERSON: R. Munn
University of NSW
Sydney, AUSTRALIA

- Development of Lightweight Concrete Containing High Volumes of Fly Ash, Bottom Ash and Waste Fines of Stone Quarries
  P. M. Nisnevich, G. Sirotin, Y. Eshel and T. Schlesinger
  The College of Judea and Samaria
  Ariel, ISRAEL

- Mineral Admixtures in Self-Compacting Concrete
  P. V. Corinaldesi and G. Moriconi
  Marche Polytechnical University, Ancona, ITALY

SESSION 18: SPONSORED BY
U.S. ADVISORY COMMITTEE
CHAIRPERSON: R. Deju
ISG Resources
South Jordan, UT, U.S.A.

- Ash Fuel Re-burn and Beneficiation at We Energies
  B.W. Ramme and B. Goeckner
  We Energies, Milwaukee, WI, U.S.A.

- Prevention of Corrosion in Concrete Using Fly Ash Mixtures
  K. Bargaheiser, ISG Resources
  Toledo, OH, U.S.A.

- Use of Foundry Industry Silica Dust in Manufacturing Economical Self-Consolidating Concrete
  T.R. Naik, R.N. Kraus and Y.M. Chun
  University of Wisconsin - Milwaukee
  Milwaukee, WI, U.S.A.
  B.W. Ramme, We Energies
  Milwaukee, WI, U.S.A.
- Effect of Treated Effluent on Concrete Durability
  P. H. Saricimen, M. Shameem, M. Barry and M. Ibrahim
  King Fahd University of Petroleum and Minerals Research Institute
  Dhahran, SAUDI ARABIA

- Durability of Alkali Activated Slag Mortars Containing Activated Slag and Metakaolinite
  S. J. Deja and J. Małolepszy
  Technical University of Mining and Metallurgy
  Krakow, POLAND
  S. Kaszuba, Gorazdze Beton SA
  POLAND

- Mixture Proportions of Structural Concrete Containing Fly Ash
  P. D. Galeota, L.A. Pajewski, G. Scoccia and R. Volpe, University of L’Aquila
  L’Aquila, ITALY

- Use of Fluidized Bed Combustion Ash as Raw Feed in the Manufacture of Calcium Sulfoaluminate Cements
  P. G. Bernardo, M. Marroccoli and G.L. Valenti
  University of Basilicata
  Potenza, ITALY
  F. Montagnaro, Università degli Studi di Napoli Federico II
  Naples, ITALY

- Utilization of Ashes from Fluidized Bed Coal Combustion
  W. Nowak
  Czestochowa University of Technology
  POLAND
  J. Maślanka and K. Ziarkowska
  Energomar-Nord, Ltd.
  Warszawa, POLAND

- The Effect of Ground, Granulated Blast Furnace Slag and Slag Cement on the Drying Shrinkage of Concrete: A Critical Review
  R.D. Hooton and K. Stanish
  University of Toronto
  Toronto, ON, CANADA
  J. Prusinski, Slag Cement Association
  Sugar Land, TX, U.S.A.

LUNCH BREAK
- 25 -
Why Discuss Litigation at a CANMET/ACI Conference?
A.M. Neville
Consultant
London, U.K.

Arbitration: Preferred Route to Dispute Resolution
T.D. Simmonds
Registered Arbitrator
Lincs, U.K.

The Three Forensic Positions of Litigation: The Plaintiffs, the Defendants and the Whole Truth
B. Erlin
The Erlin Company
Latrobe, PA, U.S.A.
SPECIAL SEMINAR: LITIGATION ISSUES AND CONCRETE INDUSTRY (CONT'D)

CHAIRPERSON: A. M. Neville
Consultant,
London, U.K.

- How to Reduce Litigation in Civil Engineering Works: The British Columbia Experience
  P. T. Seabrook
  Levelton Engineering Ltd.
  Richmond, BC, CANADA

- Lessons and Laughs in Litigation: A Lecture
  W. G. Hime
  Wiss, Janney, Elstner Associates
  Northbrook, IL, U.S.A.

- Some Legal Limitations on Technical Expert Evidence
  A. T. Amundson
  Koeller, Nebeker, Carlson & Haluck, LLP
  San Diego, CA, U.S.A.
SESSION 19: GENERAL  
CHAIRPERSON: P. Zoltanetzky  
City of New York Environ Protection  
Corona, NY, U.S.A.

- Efficiency of Inert Mineral Admixtures in Mortars  
P. M. Cyr, P. Lawrence and E. Ringot  
Laboratoire Matériaux et Durabilité des Constructions (LMDC), INSA-UPS, Toulouse, FRANCE  
A. Tagnit-Hamou, University of Sherbrooke  
Sherbrooke, QC, CANADA

- Influence of Nature of Fibres on the Physico-Chemical Characteristics of High-Performance Concrete  
S. Aggoun and E.-H. Kadri  
Université de Cergy-Pontoise  
Cergy-Pontoise, FRANCE  
M. Petrak  
Technical Univ. of Lviv  
Lviv, UKRAINE

SESSION 20: GENERAL  
CO-CHAIRS: A. Delagrave/D. Hopkins  
Lafarge Canada Inc.  
CANADA

- Study of the Compositions and Properties of Secondary Mineral Resources for Developing the Heat-Insulating Concrete not Containing Portland Cement  
P. A.G. Tuleyev, S.I. Pavlenko, K.V. Eryomkin  
N.L. Dobretsov and K. Freidin, Siberian State University of Industry (SSUI), Novokuznetsk, RUSSIA

- Study on the Properties of Different Spent Silicoaluminous Catalysts and Their Use in Cementing Mixtures  
S. Payá, J. Monzó, M.V. Borrachero, E. Peris-Mora and L. Sorian  
Universidad Politécnica de Valencia  
Valencia, SPAIN  
S. Velázquez, Universidad Panamericana Campus  
Guadalajara Jalisco, MEXICO
● Strength Development of Ternary Blended Cement with High-Calcium Fly Ash and Amorphous Silica
  P. S. Antiohos, D. Giakoumelos and S. Tsimas
  National Technical University of Athens
  Athens, GREECE

● Effect of Zeolite on Strength Properties of Mortar and Concrete
  S.V. Deodhar and R.N. Sahu
  S.S.V.P.S. B.S.D. College of Engineering
  Deopur, Dhule, M.S., INDIA

● The Pore Structure and Autogenous Shrinkage of High Performance Concrete with Ternary Binders
  P. Y. Akkaya, Istanbul Technical University
  Istanbul, TURKEY
  M. Konsta-Gdoutos
  Democritus University of Thrace
  Xanthi, GREECE
  S. Shah, Northwestern University
  Evanston, IL, U.S.A.

COFFEE BREAK: 10:30 - 11:00
THURSDAY MAY 27, 04, 11:00 - 12:30

SESSION 21: GENERAL
CHAIRPERSON: J.P. Desai
Gujarat Ambuja Cements Ltd.
Ahmedabad, INDIA

- **Influence of Quality of Powder on Fresh Properties of High-Fluidity Concrete**
P T. Fumoto and M. Yamada
Osaka City University
Sumiyoshi-ku, Osaka, JAPAN

- **Materials for Accelerating the Strength Development of Concrete Containing Large Amounts of Coal Ash**
S T. Saitoh
Energia Eco-Materia Co., Inc.
The Chugoku Electric Power Co. Group
Hiroshima-city, Hiroshima, JAPAN

SESSION 22: GENERAL
CHAIRPERSON: C. Bédard
Euclid Admixtures Canada Inc.
St-Hubert, QC, CANADA

- **Concrete Containing PFBC Coal Ash: Strength Development as Effected by Curing Temperature**
S A. Nakashita
Chugoku Electric Power Co., Ltd.
Hiroshima, JAPAN
S. Kondo, M. Tanaka and R. Sato
Hiroshima University
Hiroshima, JAPAN

- **Influence of Selected Hydrophobic Agents on Strength Parameters of Cellular Concrete Used in Bridge Engineering**
S D. Beben, Cracow Technical University, Wroclaw, POLAND
Z. Manko, Wroclaw Technical University, Wroclaw, POLAND
A Fundamental Study on Concrete Using a Binder Consisting of Three Industrial By-Products as a Substitute for Cement
S. Hashimoto, C. Hashimoto, T. Watanabe and H. Mizuguchi
The University of Tokushima
Tokushima, JAPAN

On Controlling Modulus of Elasticity and Creep in High-Strength Concrete with Multicomponent Modifier
S. Kaprielov, N. Karpenko and A. Sheinfeld
Research Institute for Concrete and Reinforced Concrete (NIIZhB)
Moscow, RUSSIA

LUNCH BREAK 12:30 - 14:00
THURSDAY MAY 27, 04, 14:00 - 15:30
SESSION 23: GENERAL
CO-CHAIRS:
N. Spiratos
Handy Chemicals Limited
Candiac, QC, CANADA

and

C. Jolicoeur
Université de Sherbrooke
Sherbrooke, QC, CANADA

- Trial Mix Program for the Jahgin Roller-Compacted Concrete Dam - Iran
  S M.E. Omram
  Mahab Ghodss Consulting Engineers
  Tehran, IRAN
  M.R.H. Dunstan
  Malcom Dunstan & Associates
  Buckfastleigh, Devon, U.K.

- Concrete with Fly Ash and Influence of Alkalinity on Strength, Leaching, and Freezing and Thawing Behaviour of Fly Ash Cement Stabilisations
  P A.L.A. Fraaij and J. M. Bijen
  Delft University of Technology
  Delft, NETHERLANDS

- The Development of Ternary Blended Cement in Canada
  S M.D.A. Thomas
  University of New Brunswick
  Fredericton, NB, CANADA
  D. Hopkins, Lafarge Canada Inc.
  Toronto, ON, CANADA
  M. Perreault, Lafarge North America
  Montreal, QC, CANADA
  K. Cail, Lafarge North America
  Calgary, AB, CANADA

- Calcined Paper Sludge as a Supplementary Cementing Material
  J. Péra
  Institut National des Sciences Appliquées de Lyon
  Villeurbanne, FRANCE

COFFEE BREAK 15:30 - 16:00
INFLUENCE OF FLY ASH ON FLOWABILITY OF FRESH MORTAR IN SELF-COMPACTING CONCRETE
C. Wattanalamlerd and M. Ouchi
Kochi University of Technology
Kochi, JAPAN

ENVIRONMENTAL LIFE-CYCLE ASSESSMENT OF CONCRETE CONTAINING FLY ASH
Z. Li and Y. Yamamoto, University of Tsukuba
Tsukuba, JAPAN
M. Sagisaka
National Institute of Advanced Science and Technology
Tsukuba, JAPAN

PROPERTIES OF FLOWABLE SELF-COMPACTING SLURRY USING QUARRY BY-PRODUCTS AND PONDED-CCPs
T. R. Naik and R. N. Kraus
University of Wisconsin-Milwaukee
Milwaukee, WI, U.S.A.
R. Siddique, Thapar Institute of Engineering & Technology
Patiala, INDIA
F. Botha, Illinois Clean Coal Institute
Cartherville, IL, U.S.A.

DURABILITY DESIGN AND APPLICATION OF HIGH-VOLUME FLY ASH FIBER REINFORCED CONCRETE COMPOSITE IN TAIWAN
C.L. Hwang and C.T. Tsai
National Taiwan University of Science and Technology
Taipei, R.O.C.
L.S. Li and Y.Y. Chen
Hwa-Sha Institute of Technology
Taipei, R.O.C.

MODE OF ACTION OF AIR-ENTRAINING IN CEMENTITIOUS SYSTEMS WITH AND WITHOUT FLY ASH
C. Jolicoeur, T.C. To and T.S. Nguyen
University of Sherbrooke, Sherbrooke, QC, CANADA
R. Hill, Boral Materials Technology
San Antonio, TX, U.S.A.
M. Pagé, Handy Chemicals Limited
Candiac, QC, CANADA
FRIDAY, MAY 28, 08:45 - 10:30

SESSION 25: GENERAL
CHAIRPERSON: L. Coppola
Mapei, Milan, ITALY

- Influence of Blast-Furnace Slag on Durability of High-Strength Concrete
  P Y. Sagawa and H. Matsushita
  Kyushu University
  Fukuoka, JAPAN
  Y. Maeda, T. Chikada and S. Kaneyasu
  Nippon Steel Blast-Furnace Slag Cement Co.
  Kitakyushu, JAPAN

- Reaction Models for Alkali-Activated Slags
  P H.J.H. Brouwers and W. Chen
  University of Twente
  Enschede, NETHERLANDS

SESSION 26: GENERAL
CHAIRPERSON: T. Horiguchi
Hokkaido University
Sapporo City, JAPAN

- Long-Term Performance of Concrete Incorporating Ground Granulated Blast Furnace Slag
  P D. Boubitsas
  Lund University
  Lund, SWEDEN

- Use of Blended Cements to Control Expansion of Concrete Due to Alkali-Silica Reaction
  S M.D.A. Thomas
  University of New Brunswick
  Fredericton, NB, CANADA
  M. Shehata, Ryerson University
  Toronto, ON, CANADA
- 35 -

COFFEE BREAK: 10:30 - 11:00

- Slag Plasters Containing Dry Resins
  S J. Małolepszy and J. Deja
  AGH University of Science and Technology
  Krakow, POLAND
  E. Jazowy, KRAKBRUK S.A.
  Krakow, POLAND

- The Use of High Range WaterReducers in Concrete Containing Fly Ash and Blast-Furnace Slag
  P W. M. Hale, University of Arkansas
  Fayetteville, AR, U.S.A.
  T. D. Bush, Frankfurt-Short-Bruza Associates
  Oklahoma City, OK, U.S.A.
  T. A. Ling, Pendergraf Engineering
  Oklahoma City, OK, U.S.A.
  B.W. Russell, Oklahoma State University
  Oklahoma City, OK, U.S.A.

- Effect of Organic Admixtures on the Mechanical Behaviour of Alkali-Activated Slag Mortars
  S M. Palacios and F. Puertas
  Eduardo Torroja Institute (CSIC)
  Madrid, SPAIN

- Effectiveness of Granulated Blast Furnace Slag in Preventing Alkali-Silica Reaction: Ten-Year Results
  S D.D. Higgins
  Cementitious Slag Makers Association
  Caterham, Surrey, U.K.
  M.D. Connell, Appleby Group Ltd.
  Scunthorpe, North Lincolnshire, U.K.
SESSION 27: GENERAL
CHAIRPERSON: K.R. Hindo
Kal R. Hindo & Associates
Clearwater, FL, U.S.A.

- Microcracking and Chloride-Ion Diffusion of Concrete Under Sustained Uniaxial Compression
  
  P C.C. Lim, Public Works Department
  Kuala Lumpur, MALAYSIA
  N. Gowripalan, University of New South Wales
  Sydney, AUSTRALIA
  V. Sirivivathanon
  CSIRO Manufacturing & Infrastructure Technology
  North Ryde, AUSTRALIA

- Evaluation of a Rice-Husk Ash in High-Performance Concrete
  
  R. Chevrier and V.M. Malhotra
  ICON/CANMET - NRCan
  Ottawa, ON, CANADA
  V.I. Lakshmanan and R. Sridhar
  Process Research ORTECH Inc.
  Mississauga, ON, CANADA

SESSION 28: GENERAL
CHAIRPERSON: J. Prusinski
Slag Cement Association
Sugar Land, TX, U.S.A.

- Early-Age Strength Development of UHPC Containing Ultra Fine Fly Ash and Metakaolin
  
  S S. Staquet and B. Espion
  University of Brussels (ULB)
  Brussels, BELGIUM

- Properties of Self-Compacting Concrete (SCC) Made With High Content of Fly Ash
  
  S R. Hela, L. Bodnárová and J. Marsalova
  Brno University of Technology
  Brno, CZECH REPUBLIC
Chloride Ingress of Concrete in Saturated and Cyclic Wetting and Drying Environments
P B.D. Miller and M.A. Miltenberger
Master Builders, Inc.
Cleveland, OH, U.S.A.

Effect of Water and Steam Curing on Long-Term Performance of Concrete
P V. Sirivivatnanon and S.L. Mak
CSIRO Manufacturing & Infrastructure Technology
North Ryde, AUSTRALIA
N. Gowripalan
University of New South Wales
AUSTRALIA

Addressing Regional Sustainability: A Case Study of Little Mountain Reservoir Reconstruction Using Concrete Containing Large Volumes of Fly Ash
S A.P. Sukumar and F. Huber
Engineering & Construction Dept., Greater Vancouver, Regional District, Burnaby, BC, CANADA
P. Seabrook, Levelton Engineering Ltd.
Richmond, BC, CANADA
J. Sherstobitoff, Sandwell Engineering, Inc.
Vancouver, BC, CANADA

The Effects of Blended Cements on Concrete Porosity, Chloride Penetrability, and Resistivity
P G.J. Kurgan, D. Tepke, A. J. Schokker, P.J. Tikalsky and B. E. Scheetz
The Pennsylvania State University
University Park, PA, U.S.A.

LUNCH BREAK: 12:30 - 14:00
FRIDAY MAY 28, 14:00 - 16:00

CLOSING PLENARY SESSION:
PRESENTATIONS BY Awardees

CHAIRPERSON: M. Collepardi
Politecnico di Milano
Milano, ITALY

- The Availability and Use of Fly Ash in Poland
  J. Deja and J. Marolepszy
  Technical University of Mining and Metallurgy
  Krakow, POLAND

- Construction and Performance of High-Volume Fly Ash Concrete Roads in India
  P. J. P. Desai
  Gujarat Ambuja Cements Ltd.
  Ahmedabad, INDIA

- The Use and Growth of GGBFS in the U.K.
  D. D. Higgins
  Cementitious Slag Makers Association
  Caterham, Surrey, U.K.

- The Use of Cementless Slag Concrete in Russia
  S. I. Pavlenko
  SSUI
  Novokuznestsk, Russia

- “We” in Promoting the Use of Fly Ash in Wisconsin
  B. W. Ramme
  We Energies
  Milwaukee, WI, U.S.A.

16:00 - 16:05

CLOSING REMARKS:

V.M. MALHOTRA, Chairperson
Committee for the Organization of CANMET/ACI International Conferences (ACI Council)

- 38 -
POSTER PRESENTATIONS

- Determination of the Hydration Degree of Blended Cement Pastes by Means of the Specific Gravity
  J. Rivera, M.I. Sanchez de Rojas and M. Frias
  Eduardo Torroja Institute (CSIC)
  Madrid, SPAIN

- Influence of Calcining Conditions on Pozzolanic Activity and Reaction Kinetics in Paper Sludge-Calcium Hydroxide Mixes
  M. Frias, M.I. Sanchez de Rojas and J. Rivera
  Eduardo Torroja Institute (CSIC)
  Madrid, SPAIN

- Leaching Characteristics of Blended Mortars Made of Copper Slags
  M.I. Sanchez de Rojas, J. Rivera, M. Frias, J.L. Esteban and M. Olaya
  Eduardo Torroja Institute (CSIC)
  Madrid, SPAIN