This symposium is organized to discuss recent technological development in process control and optimization in the field of extraction and processing of metals and materials, both in ferrous and non-ferrous industries. Although distinct from each other, ferrous and nonferrous metals extraction and processing have many aspects of process control, optimization and technology development in common and a shared symposium on these issues should benefit both industries. The specific topics include but are not limited to:

1. Control and optimization of the feed morphology and composition in processes such as ore sintering, nickel/copper, lead/zinc and aluminium/magnesium smelting and processing;
2. Control and optimization of the chemistry and transport properties of slags, steels, metals, mattes, and aqueous solutions;
3. Control and minimization of refractory degradation;
4. Control of technologically and environmentally undesirable minor components in product and waste streams;
5. Control of process parameters in iron sintering, blast furnace, casting, electrical furnaces, flash furnace, converters, refining vessels, etc.;
6. Control and optimization in deformation processing (forging, rolling, extrusion, etc.), powder metallurgy, solidification, microstructural development (grain growth, recrystallization), electronic materials, welding, etc.
7. Process automation,

A distinct emphasis will be given to process modeling & simulation and computer applications in both ferrous and non-ferrous industries and to the ways they serve to the process control and optimization of any of the above mentioned processes.
PROCESS CONTROL AND OPTIMIZATION IN FERROUS AND NON FERROUS INDUSTRY: Plenary, Thermodynamics and Bio-Processing

Sponsored by: Extraction & Processing Division, Materials Processing & Manufacturing Division, Jt. MPMD/EPD-Process Modeling Analysis & Control Committee

Program Organizers: Florian Kongoli, FLOGEN Technologies, Inc., Materials Technology Department, Montreal, Quebec H3S 2C3 Canada; Matthew John M. Krane, Purdue University, Department of Materials Engineering, West Lafayette, IN 47907 USA; Luis Ruiz-Aparicio, University of Pittsburgh, Pittsburgh, PA 15261 USA; Kirch Sawamiphakdi, The Timken Company, R&D Manufacturing Technology; Brian G. Thomas, University of Illinois, Department of Mechanical and Industrial Engineering, Urbana, IL 61801 USA

Monday AM Room: Regency Ballroom D
November 10, 2003 Location: Hyatt Regency Downtown Hotel

Session Chair: Florian Kongoli, FLOGEN Technologies Inc., Mats. Tech. Dept., Montreal, QC H3S 2C3 Canada; Brian G. Thomas, University of Illinois, Mechl. & Industl. Engrg. Dept., Urbana, IL 61801 USA

8:00 AM Florian Kongoli: Opening Remarks

8:10 AM
New Opportunities in Optimization and Control of Metals Processing: H. Shang1; J. B. Wiske1; J. F. Forbes1; H. Henein2; 1Laurentian University, Sch. of Engr., Sudbury, ON P3E 2C6 Canada; 2University of Alberta, Dept. of Chem. & Matls. Engrg., Edmonton, AB T6G 2G6 Canada

8:40 AM
Interactions of Molten Fe-Cr Alloy with Refractories: Yuhsuke Mizukami1; Tsunoe Itoh2; Masakazu Kimoto3; Takahiro Miki3; Tetsuya Nagasaka4; Mitsutaka Hino4; 1Tohoku University, Grad. Sch. of Engrg.; 2Shibukawa Works, Daido Steel Co. Ltd., Formerly ofTohoku University; 3Hitachi Systems and Services Ltd., Formerly ofTohoku University; 4Tohoku University, Dept. of Metall., Grad. Sch. of Engrg., 02 Aoba-yama, Sendai 980-8579 Japan

9:10 AM
On-Line Detection of Quality Problems in Continuous Casting of Steel: B. G. Thomas1; 1University of Illinois, Dept. of Mechl. & Industl. Engrg., 1206 W. Green St., Urbana, IL 61801 USA

9:40 AM
Process Control, Optimization and Automation Through Modeling and Simulation: Florian Kongoli1; Ian McBow1; S. Llubani2; 1FLOGEN Technologies Inc., Metals Dept., 5757 Decelles Ave., Ste. 511, Montreal, QC H3S 2C3 Canada

10:10 AM Break

10:20 AM INVITED
Effects of Ca Addition on the Thermodynamic Properties of P and B in Molten Silicon Alloys: Kazuki Morita1; 1The University of Tokyo, Dept. of Matls. Engrg., 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8656 Japan

10:45 AM INVITED
Experimental Techniques to Characterize High-Temperatures Processes Such as the Direct Decomposition of Metal Sulfides: Marcel Sturzenegger1; I. Axneit1; C. Guesdon1; M. Musella1; H.-R. Tschudi2; L. Winkel3; 1Paul Scherrer Institut, High-Temp. Solar Tech., OVG/103, 5232 Villigen PSI Switzerland

11:10 AM INVITED
Thermodynamic Simulation of Complex Metallurgical and Chemical Systems With the Method of Chemical Dynamics: B. Zilbergleyt1; M. Zinigrad2; 1System Dynamics Research Foundation, Chicago, IL USA; 2College of Judea and Samaria, Ariel Israel

11:35 AM INVITED
Parameters for Control and Optimisation of Bioleaching of Sulphide Minerals: H. Deveci1; A. Akci1; I. Alp1; 1Karadeniz Teknik Universitesi, Dept. of Mining Engrg., Trabzon TR 61080 Turkey; 2S. Demirel University, BIOMIN Grp., Mineral Prodc. Div., Dept. of Mining Engrg., Isparta TR 32260 Turkey

12:00 PM
Investigation of Genus Alyssum Species for Control and Optimization of Nickel Phytoextraction Processes and Phytoremediation of Nickel Contaminated Soils: A. Hasko1; A. uullaj2; F. Kongoli3; 1Agricultural University of Tirana, Dept. of Agronomy, Tirana Albania; 2University of Tirana, Dept. of Chmst. Albania; 3FLOGEN Technologies Inc., 5757 Decelles Ave., Ste. 511, Montreal, QC H3S 2C3 Canada
PROCESS CONTROL AND OPTIMIZATION IN FERROUS AND NON FERROUS INDUSTRY:
Feeds, Furnaces and Slags

Sponsored by: Extraction & Processing Division, Materials Processing & Manufacturing Division, Jt. MPM/EPD-Process Modeling Analysis & Control Committee

Program Organizers: Florian Kongoli, FLOGEN Technologies, Inc., Materials Technology Department, Montreal, Quebec H3S 2CS Canada; Matthew John M. Krane, Purdue University, Department of Materials Engineering, West Lafayette, IN 47907 USA; Luis Ruiz-Aparicio, University of Pittsburgh, Pittsburgh, PA 15261 USA; Krich Sawamiphakdi, The Timken Company, R&D Manufacturing Technology; Brian G. Thomas, University of Illinois, Department of Mechanical and Industrial Engineering, Urbana, IL 61801 USA

Monday PM  Room: Regency Ballroom D
November 10, 2003  Location: Hyatt Regency Downtown Hotel

Session Chair: TBA

2:00 PM INVITED
New Approach for the Optimization of Copper Concentrates Flash Combustion Through the Control of Blends and Slag Composition: Roberto Parra¹; Florian Kongoli²; Roberto Parada³; University of Concepción, Dept. of Metallurg. Engrg., Edmundo Larenas 270, Concepción Chile; ¹FLOGEN Technologies Inc., Matsls. Tech. Dept., 5757 Decelles, St.e 511, Montreal, QC H3S 2C3 Canada; ²Compañía Minera Disputada, Chagres Smelter, Pedro de Valdivia 291, Santiago Chile

2:25 PM
Modelling and Control of the Feed Preparation System of a Copper Flash Smelter: Mr. Mikko Korpi¹; Prof. Hannu Toivonen¹; Dr. Björn Saxen¹; Otukumpu Research Oy, Pyrometall., PO Box 60, FIN-28101, Pori Finland; ¹≈ akademii, Proc. Control Lab., Dept. of Chem. Engrg., Biskopsgatan 8, FIN-20500, ≈ Finland

2:50 PM
Optimization of Coke Rate and Sintering Quality by Genetic Algorithm for Two-Layer Sintering of Iron Ore: Niloy K. Nath¹; Kishalay Mitra¹; Tata Research Development and Design Centre, 54B Hadapsar Industl. Estate, Pune India; ¹Tata Consultancy Services, Mfg. Practice, 54B Hadapsar Industl. Estate, Pune India

3:15 PM Break

3:25 PM INVITED
Examining Reheating Furnace Thermal Response to Mill Delays: P. V. Bary¹; University of British Columbia, Dept. of Metals & Matsls. Engrg. Canada

3:50 PM
Comparison of Different Control Strategies for Reheating Furnaces: Mr. Chetan Premkumar Malhotra¹; Tata Research Development & Design Centre, Proc. Engrg., 54/B, Hadapsar Industl. Estate, Pune, Maharashtra 411013 India

4:15 PM INVITED

4:40 PM INVITED
Vaporization Processes and Thermodynamic Properties of Multicomponent OXide Slags: V. L. Stolyarova¹; Institute of Silicate Chemistry of the Russian Academy of Sciences, ul. Odoevskogo 24, korp. 2, St. Petersburg 199155 Russia

5:05 PM
Mathematical Model of Trace Contaminants Distribution in Copper-Nickel Production: P. S. Seryogin¹; O. V. Korotkova¹; L. Sh. Tsemekhman¹; D. V. Rumyantsev¹; Kola MMC JS, Gipronickel Inst. JS Russia

5:30 PM
Theoretical and Practical Aspects of the Direct Recycling of Slags in EAF Furnaces: Petre Stelian Nita¹; University iDunarea de Jos Galati, Faculty of Metall. & Matsls. Sci. Romania

5:55 PM
Optimization of the Reverb Furnace Slag Composition in the RTB BOR Serbia: Natasa Miticvka¹; Zivan D. Zivkovic¹; RTB BOR, Copper Inst., Zeleni bulevar 35, Bor 19210 Serbia; ¹University of Belgrade, Techl. Faculty, VJ 12, Bor 19210 Serbia
PROCESS CONTROL AND OPTIMIZATION IN FERROUS AND NON FERROUS INDUSTRY: Molten Mattes, Metals and Aqueous Processing

Sponsored by: Extraction & Processing Division, Materials Processing & Manufacturing Division, Jt. MPMD/EPD-Process Modeling Analysis & Control Committee
Program Organizers: Florian Kongoli, FLOGEN Technologies, Inc., Materials Technology Department, Montreal, Quebec H3S 2CS Canada; Matthew John M. Krane, Purdue University, Department of Materials Engineering, West Lafayette, IN 47907 USA; Luis Ruiz-Aparicio, University of Pittsburgh, Pittsburgh, PA 15261 USA; Krich Sawamiphakdi, The Timken Company, R&D Manufacturing Technology; Brian G. Thomas, University of Illinois, Department of Mechanical and Industrial Engineering, Urbana, IL 61801 USA

Tuesday AM Room: Regency Ballroom D
November 11, 2003 Location: Hyatt Regency Downtown Hotel

Session Chair: TBA

8:00 AM INVITED
Optical Spectroscopy for Process Monitoring and Production Control in Ferrous and Non-Ferrous Industry: Dr Willy Persson1; M. Sc. Wilhelm Wendt1; ‘Semtech Metallurgy AB, Ideon, Lund S-223 70 Sweden

8:20 AM
Ultrasonic Inclusion Detection and Cleanliness Measurement in Molten Aluminum and Magnesium: Dr. Yau Ono1; Mr. Jean-Francois Moisan1; Mr. Yuanbei Zhang2; Dr. Cheng-Kuei Jen3; Prof. Chun-Yi Su4; ‘National Research Council of Canada, Industl. Matls. Inst., 75 de Mortagne Blvd., Boucherville, Quebec J4B 6Y4 Canada; ‘Concordia University, Dept. of Mech. & Industl. Engrg., 1455 de Maisonneuve Blvd. W, Montreal, Quebec H3G 1M8 Canada

8:40 AM
Accurate, Responsive Melt Rate Control During Vacuum Arc Remelting: Dr. Rodney L. Williamson1; Dr. Joseph J. Beaman1; Dr. David K. Melgaard1; ‘Sandia National Laboratories, 1835, MS 1134, PO Box 5800, Albuquerque, NM 87185-1134 USA; ‘University of Texas, Mech. Engrr., Austin, TX 78712 USA

9:00 AM
Solidification of Melt on a Rapidly Rotating Disc in Centrifugal Atomisation: K. H. Ho1; Y. Y. Zhao1; ‘University of Liverpool, Dept. of Engr., Liverpool L69 3GJ UK

9:20 AM
Ladle Sculling Process Study on the Base of a Mathematical Model: I. Yu. Petrovich1; V. A. Blinov1; O. I. Zheldybin1; L. Sh. Tsemekhman1; Yu. A. Chumakov1; ‘Kola MMC JS, Gipronickel Inst. JS Russia

9:40 AM
Mathematical Model for Control of Autogenous Smelting of Copper Concentrate after High-Grade Matte Separation: V. D. Zhidovetskiy1; V. A. Blinov1; O. I. Zheldybin1; L. Sh. Tsemekhman1; L. B. Tszmbulov1; A. N. Golov1; ‘Kola MMC JS, Gipronickel Inst. JS Russia

10:00 AM Break

10:15 AM
Mathematical Model for Copper-Nickel Mattes Converting: I. Yu. Petrovich1; V. A. Blinov1; O. I. Zheldybin1; L. Sh. Tsemekhman1; Yu. A. Chumakov1; ‘Kola MMC JS, Gipronickel Inst. JS Russia

10:35 AM INVITED
Role of CFD as a Process Monitoring and Prediction Tool for Secondary Steelmaking: A. Mukhopadhyay1; ‘FLUENT Inc.

10:55 AM
Column Flotation Scale-Up after Considering the Bubble Surface Area Flux: R. Escudero1; F. J. Tavera1; ‘Universidad Michoacana de San Nicolás de Hidalgo, Inst. de Investigaciones Metalúrgicas, Santiago Tapia 403, Morelia 48000, Michoacán MÉxico

11:15 AM
Optimization of Downcomer Performance in the Jameson Cell by Measuring Electrical Conductivity: F. J. Tavera1; R. Escudero1; ‘Universidad Michoacana de San Nicolás de Hidalgo, Inst. de Investigaciones Metalúrgicas, Santiago Tapia 403, Morelia 48000, Michoacán MÉxico

11:35 AM
A Procedure for Chromate Conversion Coating of Commercial Galvanized Steel to Olive Color at Normal Temperature: A. A. Mottahedi1; ‘Iranian Aluminum Company (IRALCO), Kilometer 5 of Qom Rd., PO Box 31, Arak Iran
PROCESS CONTROL AND OPTIMIZATION IN FERROUS AND NON FERROUS INDUSTRY:
Thermo-Mechanical Process Modeling: Deformation, Quenching, Casting and Welding

Sponsored by: Extraction & Processing Division, Materials Processing & Manufacturing Division, Jt. MPMD/EPD-Process Modeling
Analysis & Control Committee

Program Organizers: Florian Kongoli, FLOGEN Technologies, Inc., Materials Technology Department, Montreal, Quebec H3S 2CS
Canada; Matthew John M. Krane, Purdue University, Department of Materials Engineering, West Lafayette, IN 47907 USA; Luis Ruiz-
Aparicio, University of Pittsburgh, Pittsburgh, PA 15261 USA; Krich Sawamiphakdik, The Timken Company, R&D Manufacturing Technol-
y, Brian G. Thomas, University of Illinois, Department of Mechanical and Industrial Engineering, Urbana, IL 61801 USA

Tuesday PM Room: Regency Ballroom D
November 11, 2003 Location: Hyatt Regency Downtown Hotel

Session Chair: Krich Sawamiphakdik, The Timken Company, Canton, OH USA

2:00 PM INVITED
Computer Modeling of Continuous Bar Rolling Mill: K. Sawamiphakdik; P. M. Pauskar; M. D. Conneely; M. A. Soorma; The Timken
Company, Timken Rsc., Canton, OH 44706 USA

2:25 PM
Mathematical Modeling of Formation of Cross-Sectional Wall Thickness Variations in Tubes During Their Cold Plug Drawing:
Prof. Gennady I. Gulyaev; Dr. Yu. G. Gulyaev; Mr. Ye. I. Shifrin; Dr. K. Sawamiphakdik; Osada State Tube Institute (DTI-VNITI), 1a
Pisarhevsky St., 5, Dniepropetrovsk 49600 Ukraine; Nizhndnieprovsk Tubeworks, Dniepropetrovsk Ukraine; The Timken Company,
Canton, OH USA

2:45 PM
Visualizing the Evolutions of Microstructure Through Quenching Process: Ms. Makiko Takahashi; Dr. Mohammed Maniruzzaman;
Dr. Richard D. Sisson, Jr.; Worcester Polytechnic Institute, Matl. Sci. & Engrg., 100 Institute Rd., Worcester, MA 01609 USA

3:05 PM Break

3:20 PM
Computer Simulation of Temperature and Thermal Stress Fields Generated During Heat Treating of JIS415H Steel Parts: H.
Castillo; M. A. Neri; Advanced Materials Research Center (CIMAV), Miguel de Cervantes No 120, Complejo Indusl. Chihuahua, C.P. 31109,
Chihuahua MEXico

3:40 PM
The Effect of Agitation on the Quenching Performance of a Quench Oil Using the CHTE Quench Probe System: Dr. Mohammed
Maniruzzaman; Mr. Mike Stratton; Mr. Thomas A. Rogers; Mr. Lee P. Barber; Prof. Richard D. Sisson, Jr.; WPI, Matls. Sci. & Engrg., 100
Inst. Rd., Worcester, MA 01609 USA

4:00 PM
Accurate Temperature Measurement During Water Quench Operations Characterized by Boiling Water Heat Transfer: Mr.
Dianfong Li; Dr. Mary A. Wells; The University of British Columbia, Dept. of Metals & Matls. Engrg., 309-6350 Stores Rd., Vancouver,
BC V6T 1Z4 Canada

4:20 PM INVITED
Process Control and Optimization of Near and Net-Shaped Aluminum-Silicon Alloys Premium Cast Products: Reza Ghomashchi;
University of Quebec at Chicoutimi, CURAL, AMPRG, Dept. of Appl. Sci., Chicoutimi, QuÈbec G7H-2B1 Canada

4:40 PM
Multidisciplinary Coupled Simulations of Investment Casting Processes Using CASTS-FLUENT: Dr. Juergen Jakumeit; Mr.
Romuald Laqua; Mr. Toni Ivas; Mr. Joseph Scheele; Dr. Markus Braun; Dr. Aniruddha Mukhopadhyay; Access e.V., Intezestr. 5, Aachen 52072
Germany; FLUENT, Hindenburgstr. 36, Darmstadt 64295 Germany

5:00 PM
Thermal Boundary Conditions for Computer Simulation of Grey Cast Iron Solidification in Sand Moulds: Mr. Niall Coone; Dr.
David J. Brownie; Mr. Martin Hussey; Dr. Denis OiMahoney; University College, Dept. of Mechl. Engrg., Belfield, Dublin 4 Ireland;
University College, Natl. Microelec. Rsch. Ctr., Cork Ireland
5:20 PM
Casting Solidification and Coupled Thermo Mechanical Behaviour of a AlSi9Cu3 Investment Casting Alloy:  Eray Erzi; Dr. Suat Yilmaz; Istanbul University, Engrg. Faculty, Metallurgl. & Matls. Engrg. Dept., Avciar Campus, Istanbul 34850 Turkey

5:40 PM
Prediction of Evolutional Stress in Friction Stir Welding:  Dr. Changming Chen;  Southern Methodist University, Rsch. Ctr. for Advd. Mfg., Dept. of Mechl. Engrg., 1500 Internatl. Pkwy., Ste. #100, Richardson, TX 75081 USA
8:00 AM INVITED

Cementite and Carbide Dissolution in Steels During Austenitization at High Heating Rates: T. C. Tzeng1; G. Shi1; S. Purohit1; 1Thermal Processing Technology Center, Dept. of Mech., Matls. & Aeros., Illinois Inst. of Tech., Chicago, IL 60616 USA

8:25 AM

Process Design and Optimization for High-Temperature Carburizing: Dr. X. Jay Gao1; Prof. Gregory B. Olson1; Dr. Frode Stavehaug2; Ms. Christina Scharer2; 1Northwestern University, Matls. Sci. & Engrg., 2220 Campus Dr., Evanston, IL 60208 USA; 2QuesTek Innovations LLC, 1820 Ridge Ave., Evanston, IL 60201 USA

8:50 AM

Grain Boundary Grooving by Surface Diffusion with Strong Surface Energy Anisotropy: Mr. T. Xin1; Dr. Harris Wong1; 1Louisiana State University, Mech. Engrg. Dept., Baton Rouge, LA 70803 USA

9:15 AM

Asynchronous Parallel Potts Model for Simulation of Grain Growth: Dr. Priya A. Manohar1; Prof. Anthony D. Rollett1; 1Carnegie Mellon University, Matls. Sci. & Engrg., 4340 Wean Hall, 5000 Forbes Ave., Pittsburgh, PA 15213 USA

9:40 AM

Irregular Cellular Automata Modeling of Recrystallization and Grain Growth in an Al-Killed Steel Including the Influence of AlN-Precipitation: Dr. Konrad G.F. Jassens1; Dr. Ernst Kozeschnik1; Dr. Fabiano Vanini1; 1Swiss Federal Institute of Technology, Inst. of Virtual Mfg., ETH Zentrum CLA, Tannenstrasse 3, Zurich, Zurich CH-8092 Switzerland; 1Graz University of Technology, Inst. for Matls. Sci., Welding & Forming, Kopernikusgasse 24, Graz A-8010 Austria

10:05 AM Break

10:20 AM


10:45 AM

Modelling of Precipitation in Multi-Component, Multi-Particle, Multi-Phase Systems: Ernst Kozeschnik1; Jiri Svoboda2; Franz Dieter Fischer1; 1Graz University of Technology, Inst. for Matls. Sci., Welding & Forming, Kopernikusgasse 24, Graz 8010 Austria; 2Academy of Science of the Czech Republic, Inst. of Physics of Matls., Zizkova 22, Brno 616 62 Czech Republic; 1Montanuniversitaet Leoben, Inst. of Mech., Franz-Josef-Str. 18, Leoben 8700 Austria

11:10 AM

Simulation of Precipitation in a Complex 9-12% Cr Steel for Modern Steam Power Plants: Joachim Rajek1; Ernst Kozeschnik1; Horst Cerjak1; 1Graz University of Technology, Inst. for Matls. Sci., Welding & Forming, Kopernikusgasse 24, Graz 8010 Austria

11:35 AM

Precipitation Kinetics of NbC in Ferrite of a Nb Microalloyed Steel: Dr. Young-Kook Lee1; 1Yonsei University, Dept. of Metallurgl. Engrg., Shinchon-dong 134 Seodaemun-ku, Seoul 120-794 S. Korea
PROCESS CONTROL AND OPTIMIZATION IN FERROUS AND NON FERROUS INDUSTRY: Microstructure Modeling: Solid-State, Cooling Processes

Sponsored by: Extraction & Processing Division, Materials Processing & Manufacturing Division, Jt. MPMD/EPD-Process Modeling Analysis & Control Committee

Program Organizers: Florian Kongoli, FLOGEN Technologies, Inc., Materials Technology Department, Montreal, Quebec H3S 2CS Canada; Matthew John M. Krane, Purdue University, Department of Materials Engineering, West Lafayette, IN 47907 USA; Luis Ruiz-Aparicio, University of Pittsburgh, Pittsburgh, PA 15261 USA; Krich Samamipakdi, The Timken Company, R&D Manufacturing Technology; Brian G. Thomas, University of Illinois, Department of Mechanical and Industrial Engineering, Urbana, IL 61801 USA

Wednesday PM Room: Regency Ballroom D
November 12, 2003 Location: Hyatt Regency Downtown Hotel

Session Chair: TBA

2:00 PM
Prediction of Austenite Decomposition During Cooling of Low and Medium Carbon Low-Alloy Steels: Dr. Ettore Anelli1; Dr. Maria Cristina Cesile1; Dr. Paolo Emilio Di Nunzio1; Centro Sviluppo Materiali S.p.A., Via di Castel Romano 100-102, Rome I-00128 Italy

2:25 PM
Computer Simulation of the Austenite-to-Ferrite Transformation in a Fe-20%Cr/Fe-7%Cr Diffusion Couple: Dr. Anders Salwén1; Swedish Institute for Metals Research, Drottning Kristinas v. 48, Stockholm S-114 28 Sweden

2:50 PM
Modeling the Formation of Bainitic Ferrite in Low-Carbon Steels: Mr. Fateh Fazeli1; Dr. Matthias Militzer1; University of British Columbia, The Ctr. for Metallurgl. Proc. Engrg., 309-6350 Stores Rd., Vancouver, BC V6T1Z4 Canada

3:15 PM Break

3:30 PM
3D FEM-Model for the Bainitic Transformation in TRIP-Aided Steels: Mr. Danny Van Dooren1; Dr. Philippe Thibaux2; Dr. Bruno Charles De Cooman3; Ghent University, Lab. for Iron & Steelmaking, Technologiepark 903, Ghent 9052 Belgium; OCAS NV, Arcelor Grp., John Kennedylaan 3, Zelzate 9060 Belgium

3:55 PM
Strain-induced martensite transformation in 0.2C-1.5Si-1.5Mn steels - influence of strain rate and deformation temperature: A. Wasilkowska1; D. Huckert1; E. Werner1; S. Traint1; A. Pichler1; Technical University Munich, Christian-Doppler-Laboratory for Modern Multiphase Steels Germany; Grande École d'ingénieurs, Institut National des Sciences Appliquées de Lyon, Lyon, France; voestalpine Stahl GmbH, Linz, Austria

4:20 PM
Theory, Validation and Application of a Microstructure Evolution Model Used for Hot Steel Rolling: Mr. Richard A. Shilkosky1; Mr. David L. Rosburg1; Mr. Jerrid D. Chapman1; INTEG Process Group, Inc., 11279 Perry Hwy., Ste. 502, Wexford, PA 15090 USA

4:45 PM
Process Simulation Development for Shape Rolling Applications: Dr Dave Lambert1; Mr. John M Walters1; Dr. Christian E Fischer1; SFTC, 5038 Reed Road, Columbus, oh 43220 usa

5:10 PM
Microstructure Prediction in Thermo-Mechanical Processing by Multi-Scale Simulation: Mr. Qiang Yu1; Dr. Sven K. Esche1; Stevens Institute of Technology, Dept. of Mechl. Engrg., Castle Point on Hudson, Hoboken, NJ 07030 USA

5:35 PM
A Numerical Model of Thermokinetics of Technology Processes with a Phase Change: Frantisek Kavicka1; Josef ätítina1; Bohumil Sekanina1; Pavel Ramik1; Brno University of Technology, Faculty of Mechl. Engrg., Technicka St. 2, Brno 616 69 Czech Republic