

TECHNICAL PROGRAM

Sunday, June 9th

Opening of Conference

(Room 234a Engineering)

Welcome message by M.C. Chaturvedi, University of Manitoba, Winnipeg, MB

8:30 – 8:40

D.K.C. MacDonald Memorial Lecture

(Room 234a Engineering)

Chair: G.J. Kipouros, Dalhousie University, Halifax, NS

Introduction: J.C. Beddoes, Carleton University, Ottawa, ON

8:40 – 9:30

Old Problems-New Solutions. The Metallurgy of 7000 Series of Aluminum Alloys

W. Wallace, X. Wu and M.D. Raizenne

Institute for Aerospace Research, National Research Council Canada

Session 1: Plenary Session – Invited Keynote Papers

(Room 234a Engineering)

Chairs: A.K. Gupta, Alcan International Limited, Kingston, ON

S. Yannacopoulos, University of Saskatchewan, Saskatoon, SK

9:30 – 10:00

Design of Superalloys for Ultra-Efficient Gas Turbines

H. Harada

High Temperature Materials 21 Project,

National Institute for Materials Science, 1-2-1 Sengen,

Tsukuba Science City, 305-0047, Japan

10:00 – 10:30

Gamma TiAl Alloys: Emerging Structural Materials and Future Development

Y-W. Kim

UES-Materials and Processes Division, 4401 Dayton-Xenia Road,

Dayton, Ohio 45432, USA

10:30 – 11:00

Coffee Break

- 11:00 – 11:30 **On the Theory of Diffusion in Liquid Metals**
J.R. Cahoon
Department of Mechanical and Industrial Engineering,
University of Manitoba, Winnipeg, Manitoba, R3T 5V6, Canada
- 11:30 – 12:00 **Phase Diagram Computations in Materials Science and Engineering**
W.T. Thompson
Department of Chemistry and Chemical Engineering,
Royal Military College of Canada, Kingston, Ontario, Canada
- 12:00 – 12:30 **Powders, Granules and Droplets in Materials Processing**
H. Henein
AMPL, University of Alberta, Edmonton, Alberta, T6G 2G6

Session 2(a) – Light Materials

(Room 234a Engineering)

Chairs: B.J. Diak, Queen's University, Kingston, ON

C. (Ravi) Ravindran, Ryerson University, Toronto, ON

- 2:00-2:20 **The Properties and Characteristics of AA6111 Aluminum Automotive Sheet Alloy**
A.K. Gupta and D.J. Lloyd
Kingston Research and Development Centre,
Alcan International Limited, P.O. 8400, Kingston, Ontario, K7L 5L9
- 2:20-2:40 **Porosity in Foam Cast Aluminum Alloys**
C. (Ravi) Ravindran
Department of Mechanical, Aerospace, and Industrial Engineering,
Ryerson University, 350 Victoria Street, Toronto, Ontario, M5B 2K3
- 2:40-3:00 **Effect of Cold Work on the Precipitation Kinetics of AA6111 Aluminum Automobile Panels**
G.K. Quainoo and S. Yannacopoulos
Department of Mechanical Engineering, University of Saskatchewan,
57 Campus Drive, Saskatoon, Saskatchewan, S7N 5A9

- 3:00-3:20 **Dependence of Microstructure and Fatigue Properties on Welding and Weld Heat Affected Zone (HAZ) Simulation in 2195 Al-Li Alloy**
M.C. Chaturvedi¹ and D.L. Chen²
¹*Department of Mechanical and Industrial Engineering, University of Manitoba, Winnipeg, Manitoba, R3T 5V6*
²*Department of Mechanical, Aerospace, and Industrial Engineering, Ryerson University, 350 Victoria Street, Toronto, Ontario, M5B 2K3*
- 3:20-3:40 **Laboratory Simulation of an Industrial Powder Metallurgy Practice Used to Manufacture Aluminum Engine Components**
B. Paton, W.F. Caley, G.J. Kipouros and D.P. Bishop
Department of Mining and Metallurgical Engineering, Dalhousie University, Halifax, Nova Scotia
- 3:40-4:10 **Coffee Break**
- 4:10-4:30 **The New Physical Metallurgy of Recrystallization and Grain Growth in Non-Hardenable Aluminum Alloys**
S. Cao¹, S. Saimoto¹ and H. Jin²
¹*Materials and Metallurgical Engineering, Queen's University, Kingston, Ontario, K7L 3N6*
²*Alcan Inc., Kingston R&D Centre, Kingston, Ontario*
- 4:30 – 4:50 **Microsegregation Studies for Rapidly Solidified Al-Cu Alloys**
A. Prasad¹, C.A. Gandin², and H. Henien¹
¹*AMPL, University of Alberta, Edmonton, Alberta, T6G 2G6*
²*LS2GM, Ecole des Mines, UMR CNRS-INPL-UHP 7584, 54042 Nancy, France*
- 4:50 – 5:10 **Solid Liquid Phase Equilibrium in the Mg-Al-Zn System with Applications to Semi-solid Forming**
F. Akbari¹, W.T. Thompson¹, M. Shehata², E. Es-Sadiqi²
¹*Center for Automotive Materials and Manufacturing*
²*Materials Technology Laboratory – CANMET*
- 5:10 – 5:30 **Estimation of the Speed Rate of the Growth of the Primary Crystals of Dissolved Component Accounting for the Boundary Diffusion Layer**
G. Ivanova
Rybinsk State Academy of Aviation Technology, Rybinsk, Russia

Session 2(b)-Metal Chemistry and Processing – I

(Room 234b Engineering)

Chairs: V.G. Papangelakis, University of Toronto, Toronto, ON

W.F. Caley, Dalhousie University, Halifax, NS

- 2:00-2:20 **Iron Removing from Copper Acidic Solutions by Ion Exchange**
F. Parada¹, I. Wilkomirsky¹, B. Wassink², D. Dreisinger²
*¹Metallurgical Engineering Department,
University of Concepcion, Chile*
*²Metals and Materials Engineering Department,
University of British Columbia, Canada*
- 2:20-2:40 **Nickel Electrowinning from Laterite-based Sulphate
Electrolytes: The Influence of Chloride Ions**
A.M. Alfantazi¹ and A. Shakshouki²
*¹Metals and Materials Engineering Department,
University of British Columbia, Vancouver, British Columbia
V6T 1Z4*
*²School of Engineering, Laurentian University, Sudbury, Ontario
P3E 2C6*
- 2:40-3:00 **The Reaction of Acanthite Mineral During Pressure Oxidation of
Mixed Sulphides**
S.A. Bolorunduro¹, D.B. Dreisinger¹ and G. Van Weert²
*¹Department of Metals and Materials Engineering,
University of British Columbia, 309-6350 Stores Rd., Vancouver,
British Columbia V6T 1Z4*
*²Oretome Limited, RR#3 Humber Station Road, Caledon East,
Ontario, L0N 1E0*
- 3:00-3:20 **Production of CaSO₄ Materials from Concentrated Aqueous
Chloride Solutions**
S. Girgin and G.P. Demopoulos
*Department of Mining, Metals and Materials Engineering,
McGill University, 3610 University Street, Montreal, Quebec,
H3A 2B2*
- 3:20-3:40 **Nickel Hydroxide Production: A Solubility Study**
C. Sist and G.P. Demopoulos
*Department of Mining, Metals and Materials Engineering,
McGill University, 3610 University Street, Montreal, Quebec,
H3A 2B2*
- 3:40-4:10 **Coffee Break**

- 4:10-4:30 **Metal Solubilities in $\text{H}_2\text{SO}_4\text{-Fe}_2(\text{SO}_4)_3\text{-MgSO}_4$ Solutions within 230 to 270°C**
X. Zhu, J. Brown and V.G. Papangelakis
Department of Chemical Engineering and Applied Chemistry,
University of Toronto, 200 College Street, Toronto, Ontario,
M5S 3E5
- 4:30 – 4:50 **Conductivity and Acidity in $\text{H}_2\text{SO}_4\text{-Al}_2(\text{SO}_4)_3\text{-MgSO}_4$ Solutions at High Temperatures**
M. Huang, J.P. Portelli and V.G. Papangelakis
Department of Chemical Engineering and Applied Chemistry,
University of Toronto, 200 College Street, Toronto, Ontario,
M5S 3E5
- 4:50 – 5:10 **Recovery of Iron From Bauxite Residue**
B. Mishra
Department of Metallurgical and Materials Engineering,
Colorado School of Mines, Golden, Colorado, 80401, USA
- 5:10 – 5:30 **Cobalt Recovery from Industrial Effluents Generated by Electrodeposition of Nanocrystalline Co-Based Alloys**
J.H. Huang, M. Oliazadeh and A.M. Alfantazi
Department of Metals and Materials Engineering,
University of British Columbia, Vancouver, British Columbia
V6T 1Z4

Monday, June 10th

Session 3(a)-High Temperature Materials

(Room 234a Engineering)

Chairs: N.L. Richards, University of Manitoba, Winnipeg, MB

R.C. Reed, University of British Columbia, Vancouver, BC

- 8:30 – 8:50 **Interdiffusion of the Platinum-Group Metals in Nickel at Elevated Temperatures**
R.C. Reed
Professor and Canada Research Chair,
Department of Metals and Materials Engineering,
University of British Columbia,
309-6350 Stores Rd., Vancouver, British Columbia, V6T 1Z4

- 8:50 – 9:10 **The Strengthening Effect of Refractory Elements on γ/γ' Interface in Single Crystal Ni-base Superalloys**
K. Chen¹, L.R. Zhao¹ and J.S. Tse²
*¹Structures Materials and Propulsion Lab,
Institute for Aerospace Research,
National Research Council Canada, Ottawa, Ontario*
*²Theory and Computational Group,
Steacie Institute for Molecular Sciences,
National Research Council Canada, Ottawa, Ontario*
- 9:10 – 9:30 **Electronic Mechanism of γ/γ' Interface Strength of Ir-base Alloys**
K. Chen¹, L.R. Zhao¹ and J.S. Tse²
*¹Structures Materials and Propulsion Lab,
Institute for Aerospace Research,
National Research Council Canada, Ottawa, Ontario*
*²Theory and Computational Group,
Steacie Institute for Molecular Sciences,
National Research Council Canada, Ottawa, Ontario*
- 9:30 – 9:50 **Compositional and Microstructural Effects on Phasial Stability of Single Crystal Superalloy Systems**
R. Kearsey and J.C. Beddoes
*Department of Mechanical and Aerospace Engineering,
Carleton University, Ottawa, Canada*
- 9:50 – 10:10 **Repair & Overhaul of Hot End Gas Turbine Components**
N.L. Richards and M.C. Chaturvedi
*Department of Mechanical and Industrial Engineering,
University of Manitoba, Winnipeg, Manitoba, R3T 5V6*
- 10:10 – 10:40 **Coffee Break**
- 10:40 – 11:00 **Investigation on the Microstructure, Segregation and Properties of DS Ni-base Superalloy TMD-103 and its Variants**
X.H. Yu, N.L. Richards, and M.C. Chaturvedi
*Department of Mechanical and Industrial Engineering,
University of Manitoba, Winnipeg, Manitoba, R3T 5V6*
- 11:00 – 11:20 **Microstructure Characterization of Ni-Based Inconel 718 Superalloy Containing C, B and P**
H. Habibi, N.L. Richards, and M.C. Chaturvedi
*Department of Mechanical and Industrial Engineering,
University of Manitoba, Winnipeg, Manitoba, R3T 5V6*

11:20 – 11:40 **Microstructures and Creep Properties of Directionally Solidified XD-TiAl Intermetallics**
D.Y. Seo¹, H. Saari², L.R. Zhao¹, and J. Beddoes²
*¹Structures Materials and Propulsion Lab,
Institute for Aerospace Research,
National Research Council Canada, Ottawa, Ontario
²Department of Mechanical and Aerospace Engineering,
Carleton University, Ottawa, Canada*

11:40 – 12:00 **Composition Dependence of Microstructural Evolution in γ -based TiAl Alloys**
U. Prasad and M.C. Chaturvedi
*Department of Mechanical and Industrial Engineering,
University of Manitoba, Winnipeg, Manitoba, R3T 5V6*

Session 3(b)- Metal Chemistry, Processing and Corrosion II
(Room 234b Engineering)

Chairs: H. Henein, University of Alberta, Edmonton, AB

J.R. Cahoon, University of Manitoba, Winnipeg, MB

8:30 – 8:50 **The Effect of Magneto-hydrodynamic Stirring of Copper During Reduction with Solid Graphite**

T. Marin¹, A. Warczok², G. Riveros² and T. Utigard¹

*¹Department of Materials Science and Engineering,
University of Toronto, 184 College Street, Toronto, Ontario,
M5S 3E5*

²University of Chile, Department of Mining Engineering

8:50 – 9:10 **Copper Melt Penetration Resistance of Magnesite-Chrome and MgAl₂O₄ Refractories**

C.A. Rodriguez¹, W.F. Caley² and R.A.L. Drew¹

*¹Department of Mining, Metals and Materials Engineering,
McGill University*

*²Department of Mining and Metallurgical Engineering,
Dalhousie University*

9:10 – 9:30 **Mechanism and Kinetics of Lead Softening**

D. Vineberg

*McGill University, Department of Mining,
Metals and Materials Engineering*

- 9:30 – 9:50 **Comparative Study of Oxides Speciation Techniques for Magnesium Electrolyte**
S. Kashani-Nejad, R. Harris and K.W. Ng
Department of Mining, Metals and Materials Engineering,
McGill University
- 9:50 – 10:10 **Electrochemical Investigation of Copper Anode Passivation in a Copper Sulfate Solution**
G. Jarjoura and G.J. Kipouros
Department of Mining and Metallurgical Engineering,
Dalhousie University, P.O.Box 1000, Halifax, Nova Scotia, B3J 2X4
- 10:10 – 10:40 **Coffee Break**
- 10:40 – 11:00 **Effects of Hydrogen on the Nature of the Passive Film on Iron**
J.G. Yu¹, J.L. Luo¹, C.S.Zhang² and P.R. Norton²
¹Department of Chemical and Materials Engineering,
University of Alberta, Edmonton, Alberta, T6G 2G6
²Department of Chemistry, University of Western Ontario,
London, Ontario, N6A 5B7
- 11:00 – 11:20 **A Study of the Effect of Electroless Nickel-Phosphorus (EN) Coatings on the Fatigue Properties of Carbon Steel Substrates**
R. Taheri and S. Yannacopoulos
Department of Mechanical Engineering, University of Saskatchewan,
57 Campus Drive, Saskatoon, Saskatchewan, S7N 5A9
- 11:20 – 11:40 **A Study on the Corrosion Behaviour of Nanostructured Electrodeposited Cobalt**
A. Aledresse
Laurentian University, Sudbury, Ontario
- 11:40 – 12:00 **The State of the Art in Computer Modelled Crevice Corrosion of Passive Metals**
K. Heppner, R.W. Evitts, and J. Postlethwaite
Department of Chemical Engineering, University of Saskatchewan,
57 Campus Drive, Saskatoon, Saskatchewan, S7N 5A9
- 12:00 – 12:20 **Corrosion and Hydrogen Permeation Characteristics of Near-Neutral pH Synthesized Soil Environments**
Z. Zhang, W. Chen and R. Eadie
Department of Chemical and Materials Engineering,
University of Alberta, Edmonton, Alberta, T6G 2G6

Session 4(a) – Composite Materials

(Room 234a Engineering)

Chairs: G. Fernlund, University of British Columbia, Vancouver, BC

D.M. Shinozaki, University of Western Ontario, London, ON

- 2:00-2:20 **The Failure Mechanisms of Particulate Aluminum Alloy Composites Subjected to Thermal Fatigue**
I.N.A. Oguocha and S. Yannacopoulos
Department of Mechanical Engineering,
University of Saskatchewan, 57 Campus Drive, Saskatoon,
Saskatchewan, S7N 5A9
- 2:20-2:40 **The Microstructure of Particle-Reinforced Age-Hardenable Aluminum Alloy MMCs**
I.N.A. Oguocha and S. Yannacopoulos
Department of Mechanical Engineering,
University of Saskatchewan, 57 Campus Drive, Saskatoon,
Saskatchewan, S7N 5A9
- 2:40-3:00 **Investigation of the Thermal Creep Properties of Al-Alloy Composites made by Powder Metallurgy Technique**
R.N. Saraf and R.J. Klassen
Department of Mechanical and Materials Engineering,
University of Western Ontario, London, Ontario, N6A 5B7
- 3:00-3:20 **Joining MMCs using Transient Liquid Phase Bonding**
M. Brochu¹, F. Edelmann¹, M.D. Pugh² and R.A.L. Drew¹
¹Department of Metals and Materials Engineering,
McGill University, Montreal
²Department of Mechanical Engineering, Concordia University,
Montreal
- 3:20-3:40 **Thermal Relaxation of Internal Strain in Two-Phase Cu-Nb Wire**
R.J. Klassen¹, K.T. Conlon² and J.T. Wood¹
¹Department of Mechanical and Materials Engineering,
Faculty of Engineering Science, University of Western Ontario,
London, Ontario, N6A 5B9
²Neutron Program for Materials Research,
National Research Council of Canada, Chalk River Laboratories,
Building 459, Chalk River, Ontario, K0J 1J0
- 3:40-4:10 **Coffee Break**

- 4:10-4:30 **Modeling of EB Curing of Composite Materials**
A. Johnston¹, M. Hojjati¹, K.C. Cole² and V.J. Lopata³
¹*National Research Council Canada, Ottawa, Ontario*
²*National Research Council Canada, Boucherville, Quebec*
³*Accion Industries Ltd.*
- 4:30 – 4:50 **Process Induced Warpage of a 777 Aft Strut Closeout Fairing**
L. Hendrickson
Boeing Canada Technology Inc., Winnipeg, Manitoba
- 4:50 – 5:10 **Delamination Behaviour of Unidirectional CFRP Under Mode I, Mode II, and Mixed-Mode Elastic Loading**
K. Kanji and A. Poursartip
Composites Group,
Department of Metals and Materials Engineering,
The University of British Columbia, Vancouver, British Columbia,
V6T 1Z4
- 5:10 – 5:30 **Understanding Hybrid Fabric Armour Systems**
W. Novotny, E. Cepus, A. Shahkarami, A. Poursartip, R. Vaziri
Composites Group,
Department of Metals and Materials Engineering,
The University of British Columbia, Vancouver, British Columbia,
V6T 1Z4

Session 4(b) – Ferrous Materials

(Room 234b Engineering)

Chairs: J.D. Boyd, Queen's University, Kingston, ON

W. Chen, University of Alberta, Edmonton, AB

- 2:00-2:20 **Control of Heat and Mass Transport in Continuous Casting Mold Through Swirl Flow in Immersion Nozzle**
S. Yokoya
¹*Department of Mechanical Engineering,*
Nippon Institute of Technology, Miyashiro, Minami-saitama,
Saitama, 345-8501, Japan
²*Division of Materials Science and Engineering, Graduate School of*
Engineering, Hokkaido University, North 13, West 8, Kitaku,
Sapporo, 060-8628, Japan
³*Department of Materials Science and Processing, Osaka University,*
Yamadaoka, Suita, Osaka-fu, 565, Japan

- 2:20-2:40 **Characterization of Residual Stress in Butt-Welded Pipe by an Image Processing Technique**
C. Slowik, H. Lu, D.L. Chen and S. Bhole
Department of Mechanical, Aerospace and Industrial Engineering,
Ryerson University, Toronto, Canada
- 2:40-3:00 **Effect of Excess Energy During Impact on Charpy Absorbed Energy**
S. Xu, G. Shen, R. Bouchard and W.R. Tyson
CANMET – Materials Technology Laboratory,
Natural Resources Canada, 568 Booth Street, Ottawa,
Ontario, K1A 0G1
- 3:00-3:20 **Characterization of Bainitic Microstructures by X-ray Texture and Line Profile Analysis**
B.J. Diak, I.A. Yakubtsov and J.D. Boyd
Department of Mechanical Engineering, Nicol Hall,
Queen’s University, Kingston, Ontario, K7L 3N6
- 3:20-3:40 **Microstructure Examination of Weld HAZ in Grade 100 Microalloyed Steel**
K. Poorhaydari-A, D.G. Ivey and B.M. Patchett
Department of Chemical and Materials Engineering,
University of Alberta, Edmonton, Alberta, T6G 2G6
- 3:40-4:10 **Coffee Break**
- 4:10-4:30 **Shear Localization and its Consequence in Metal Cutting**
S.V. (Mani) Subramanian
Department of Materials Science and Engineering,
McMaster University, Hamilton
- 4:30 – 4:50 **Effects of Deformation, Alloying and Cooling Rate on the CCT Behavior of Low Carbon Steels**
R. Zhang, I.A. Yakubstov and J.D. Boyd
Department of Mechanical Engineering, Queen’s University,
Kingston, Ontario, K7L 3N6
- 4:50 – 5:10 **Effect of External Electrical Field on the Hardenability of Steel**
B. Salehpour, H. Bounik
Faculty of Physics, University of Tabriz, Iran

5:10 – 5:30 **Martensitic Transformation in the Nano-Size Cu Precipitates in a Maraging Steel**
H.R. Habibi
Department of Mechanical and Industrial Engineering,
University of Manitoba, Winnipeg, Manitoba, R3T 5V6

Tuesday, June 11th

Session 5(a)-Characterization of Materials

(Room 234a Engineering)

Chairs: L.R. Zhao, Institute of Aerospace Research, NRC, Ottawa, ON

T. Malis, Materials Technology Laboratory, CANMET, Ottawa, ON

8:30 – 8:50 **Studies on the Effect of Some Nearest Neighbor Orientations on the Stability of {011}<211> Texture in Polycrystalline Aluminum: Simulations**

L. Delannay¹, B.J. Diak², P. Van Houtte

Departement Metaalkunde en Toegepaste Materiaalkunde,

Katholieke Universiteit Leuven, Kasteelpark Arenberg 44, 3001

Heverlee, Belgium

¹Presently at Metallurgie, Structure et Rheology, Centre de Mise en Forme des Materiaux – CEMEF, Ecole des Mines de Paris, BP 207, Sophia Antipolis Cedex, France, 06904

²Presently at Department of Mechanical Engineering, Nicol Hall, Queen's University, Kingston, Ontario, K7L 3N6

8:50 – 9:10 **Advances in Microstructure Characterization using Orientation Image Mapping**

*J. Cooley, S. Cao, S. Saimoto and J. Sutcliffe**

Queen's University, Kingston, Ontario

**HKL Technology Inc., Burnt Hills, N.Y., U.S.A*

9:10 – 9:30 **Comparison of NiMnGa and CoNi Magnetic Shape Memory Alloys**

G. Pirge¹, C.V. Hyatt¹, M. Gharghour², T. Koch², G.C. Fisher¹, R.M. Armstrong¹, I.A. Keough¹ and J.R. Matthews¹

¹DRDC Atlantic

²Dalhousie University

9:30 – 9:50 **Applications of TEM to Industrial Problems at CANMET**

T. Malis, G.J.C. Carpenter, S. Dionne, G.A. Botton and

*M.W. Phaneuf**

Materials Technology Laboratory, CANMET, Ottawa, Ontario

** Fibics Inc., Ottawa, Ontario*

- 9:50 – 10:10 **The Influence of Hydrogen on the Lattice Parameters of Pure Copper**
A. El-Amoush
Al-Balqa Applied University, Tafila Applied University College,
Al-Iss, P.O.Box 179 Tafila, Jordan
- 10:10 – 10:40 **Coffee Break**
- 10:40 – 11:00 **The Phase Transition in PMN-PT Electrostrictors**
S. Ferguson¹, H.W. King¹, D.F. Waechter², and S.E. Prasad²
¹*University of Victoria, Department of Mechanical Engineering,*
Victoria, BC, V8W 3P6
²*Sensor Technology Ltd., Collingwood, Ontario, L9Y 3Z4*
- 11:00 – 11:20 **On the Pre-Precipitate Clustering in Al-Li-Cu-Mg-Zr Spray Formed Alloys**
H. Habibi
Department of Mechanical and Industrial Engineering,
University of Manitoba, Winnipeg, Manitoba, R3T 5V6
- 11:20 – 11:40 **Effective Thermal Conductivity of the Porous Material**
B. Qiang¹, J. Dryden¹, F. Zok²
¹*Department of Mechanical and Materials Engineering,*
The University of Western Ontario, London, Ontario, N6A 5B9
²*Material Department, University of California, Santa Barbara,*
California 9316
- 11:40 – 12:00 **Displacement Controlled Microindentation Testing of Polymers**
D.M. Shinozaki
The University of Western Ontario, London ON

Session 5(b)-Deformation Behavior of Materials

(Room 234b Engineering)

Chairs: D.L. Chen, Ryerson University, Toronto, ON

M.N. Bassim, University of Manitoba, Winnipeg, MB

- 8:30 – 8:50 **An Analytical Model for Microstrain Accumulation in fcc Metals**
D. Dye
Neutron Program for Materials Research, NRC Chalk River,
Chalk River, Ontario

- 8:50 – 9:10 **Dislocation Structures in Low-Cycle Fatigue of Commercial Copper**
N. Bassim
Department of Mechanical and Industrial Engineering,
University of Manitoba, Winnipeg, Manitoba, R3T 5V6
- 9:10 – 9:30 **Cyclic Stress-Strain Response and Dislocation Structures in Polycrystalline Aluminum**
Y. El-Madhoun and M.N. Bassim
Department of Mechanical and Industrial Engineering,
University of Manitoba, Winnipeg, Manitoba, R3T 5V6
- 9:30 – 9:50 **The Effect of Grain Size on Low Cycle Fatigue of Polycrystalline Al-4.5wt.%Cu Alloy**
A. Mohamed and M.N. Bassim
Department of Mechanical and Industrial Engineering,
University of Manitoba, Winnipeg, Manitoba, R3T 5V6
- 9:50 – 10:10 **Room Temperature Creep Behaviour of X-100 Line Pipe Steel**
H. Zhu and W. Chen
Department of Chemical and Materials Engineering,
University of Alberta, Edmonton, Alberta, T6G 2G6
- 10:10 – 10:40 **Coffee Break**
- 10:40 – 11:00 **Fracture Behaviour of High Strength Dual Phase Steels**
P. Poruks
Department of Mechanical Engineering, Queen's University,
Kingston, Ontario
- 11:00 – 11:20 **Experimental Observations of Void Nucleation and Growth in Zr-2.5Nb**
R.A. Peace¹ and R.E. Miller²
¹Department of Mechanical Engineering,
University of Saskatchewan, 57 Campus drive, Saskatoon,
S7N 5A9
²Department of Mechanical and Aerospace Engineering, Carleton
University, 1125 Colonel By Drive, Ottawa, Ontario, K1S 5B6
- 11:20 – 11:40 **A New Lateral Force-Sensing Indentation Technique for Determination of Interfacial Bonding Strength**
H. Zhang and D.Y. Li
Department of Chemical and Materials Engineering,
University of Alberta, Edmonton, Alberta, Canada T6G 2G6

11:40 – 12:00

Computer Simulation of Solid Particle Erosion

Q. Chen and D.Y. Li

Department of Chemical and Materials Engineering,

University of Alberta, Edmonton, Alberta, Canada T6G 2G6