

## The Lead & Zinc '05 Committees

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 The Surface Finishing Society of Japan  
 The Japan Society of Corrosion Engineers  
 Japan Galvanizers Association, Inc.  
 Japan Die Casting Association  
 Battery Association of Japan

## General Information

### Conference Dates

October 17 (Mon) – 19 (Wed), 2005

### Conference Location

Kyoto TERRSA  
Shinmachi Kujo, Minami-ku, Kyoto 601-8047, Japan (Kyoto Citizen's Amenity Plaza)  
Phone 075-692-3400 Fax 075-692-3402

### Lead & Zinc '05 Correspondence Office during Conference

Conference office in Kyoto TERRSA  
Phone 090-6034-3785

### Authors' Coffee

All presenters and chairpersons are requested to attend the Authors' Coffee on the day of their presentation. The Authors' Coffee will be held from 8:20 to 8:55 am in a room on the third floor.

### Preview Room

There are 2 rooms for previewing speakers' files by LCD (Liquid Crystal Display) projectors. One is a preview ROOM A on the third floor, and is for authors presenting at the session rooms 1 and 2. The other is a preview ROOM B on the second floor, and is for authors presenting at the session room 3. LCD projectors are connected with the same PC (Windows XP, installed power point 2003) that is prepared in session rooms. All speakers who plan to use conference PC for presentation are required their presentation files to transfer an USB-Stick (USB Flash memory) or a CD (compact disk). The data transfer must be completed during authors' coffee each morning or during coffee breaks.

The rooms will be open during the following hours:

Monday, Oct. 17	9:00-18:00
Tuesday, Oct. 18	9:00-18:00
Wednesday, Oct.19	9:00-16:00

### Message Board

Emergency messages will be placed on a message board located by the general information desk on the first floor.

### Internet Room

Each preview room also serves for an internet room and is opened at the same time. A LAN system (cable LAN / wireless LAN) is prepared for use of internet. Participants may use this system by your own laptops (Windows / Macintosh).

## Social Program

### Welcoming Reception

The social side of the symposium begins with a complimentary Welcoming Reception from 19:00 to 21:00 on Sunday evening, October 16, 2005 at the Restaurant "SUZAKU" on the first floor of the East Building of Kyoto Terrsa. Snacks and free drinks are served. All delegates and their spouses are invited to this informal gathering which will allow an opportunity to renew old acquaintances and make new friends.

### Welcoming Luncheon

A complimentary Delegates Luncheon is held from 12:40 to 14:30 in TERRSA Hall on Monday, Oct. 17, 2005.

### Banquet

The Banquet is held from 19:00 to 21:00 on the night of Tuesday, Oct. 18, 2005 in TERRSA Hall. Banquet ticket is included in the registration fee.

## Others

### Technical Tours

Two technical tours of lead and zinc plant operations in Japan are arranged and they take place beginning on Thursday, Oct. 20, 2005, the next day after the symposium. These tours are restricted to registered participants, who will get a more detailed program at the information desk.

#### **1. Technical Tour bound for West Japan, Oct. 20-21**

Technical Tour No.1 covers two smelters/refineries and two companies of application of lead and zinc located along the coast of the inland sea in west Japan for two days, which includes the ISP lead and zinc operations in Harima Smelter, Sumitomo Metal Mining Co., Ltd. and the lead operation in Takehara Refinery, Mitsui Mining and Smelting Co., Ltd., a lead-acid battery plant in GS Yuasa Corporation, and a galvanizing zinc plating operation in Kakogawa Works, Kobe Steel, Ltd. This tour is a two-day bus trip, stating from Kyoto TERRSA lobby (conference place) and returning there in the evening of Oct. 21. It may be strongly advisable that you make the lodging reservation for the night of Oct. 21 in Kyoto or so, considering the return flight schedule from Kansai International Airport. The fee includes the bus travel expense and one night lodging (Oct. 20) with dinner and breakfast.

#### **2. Technical Tour bound for East Japan, Oct. 20-22**

This tour covers the zinc plant in Iijima Refinery, Akita Zinc Co., Ltd., the lead plant in Kosaka Smelting & Refining Co., Ltd, and the ISP lead and zinc operations in Hachinohe Smelting Co., Ltd. This tour is a three-day trip by airplane and bus, starting from Kyoto TERRSA lobby (conference place) on Oct. 20 and returning there in the late afternoon of Oct. 22. This season of a year in the Tohoku mountain area is the prime of colored leaves, which you can enjoy as well as the plants tour. The fee includes all the travel

expenses of round trip from and to Kyoto TERRSA and two night lodgings with dinners and breakfasts (Oct. 20 and 21). It may be advisable that you make the lodging reservation for the night of Oct. 22 in Kyoto or so, considering the return flight schedule from Kansai International Airport.

## **Accompanying Persons' Programs**

### **1. Japanese Culture Experience / Oct. 17 and 19, Morning**

At Kyoto Terrsa, accompanying persons' program gives you the great opportunity to experience Japanese cultures such as the tea ceremony, flower arrangement, calligraphy, or wearing Kimono. Accompanying persons who plan to enjoy this program may apply to the information desk at the front lobby.

The tea ceremony is an ideal way to experience typical Japanese aesthetics. In the course of flower arrangement, you can enjoy the unique Japanese styles of flower arrangement and compare them with Western styles. With traditional brushes and India ink, you can try writing your names and some interesting Japanese characters "Kanji". The deluxe course of wearing Kimono will give women a chance to wear Komon (short sleeved casual kimono) and men a chance to try the Kinagashi Kimono (casual kimono for men). Each course will last for 2 hours, and are arranged in Kyoto Terrsa in the morning on Monday and Wednesday. The program is covered by in the accompanying persons' registration fee.

### **2. City Tour / Oct. 18, Afternoon, Optional**

Another program of "City Tour" described below gives the option of sightseeing with an English-speaking guide in the afternoon on Tuesday. The tour departs from the front gate of Kyoto Terrsa. The ticket for this tour is not included in the registration fee. Planning to join this optional tour, please contact to the information desk at the front lobby by 18:00, Oct. 17.

This tour includes the Sagano sightseeing tram from Saga torokko station to Kameoka torokko station and rapid shooting on the Hozukyo River from Kameoka to Arashiyama. You can enjoy the open-air tram offering a cooling, refreshing recreation ride. Even the latest-model tram, "The Richi," features an open grid floor, so passengers can look out of the scenic window view while feeling the natural breeze. After the tram riding, you experience an exciting 16 kilometer, ninety-minute trip downstream, shooting the Hozu Rapids aboard a flat-bottomed boat from Kameoka to scenic Arashiyama. The changing in beauty of the winding gorge leaves unforgettable memories.

## Events and Session Program

### Sunday, Oct. 16

	Front Lobby Registration Desk *	Restaurant "SUZAKU"
	Registration ( 16:00 – 19:00 )	Welcoming Reception ( 19:00 – 21:00 )

\*Registration Desk is opened on Monday and Tuesday at 8:15 – 18:00.

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Memo

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Welcome to Kyoto

It is our great pleasure to invite you to the international symposium on lead and zinc processing which will be held in Kyoto from October 17 to 19, 2005. Kyoto is in the heart of Japan and was an old capital for more than a thousand years. Osaka next to Kyoto is Japan's second largest commercial city; Kobe next to Osaka is Japan's second largest seaport and gateway to the Pacific Ocean. These three cities in the area known as Kansai area have been forming an original province of cultures for a long time, different from the Kantou area around Tokyo. We hope you will be able to enjoy the atmosphere brought about with Kansai cultures and its old history.

## Sessions on Monday, Oct. 17

<b>Authors' Coffee Room</b>			
08:20	Authors' Coffee		
<b>TERRSA Hall</b>			
09:00	Opening Address		
09:30	Plenary Lectures I		
10:30	Coffee Break		
	<b>Session Room 1</b>	<b>Session Room 2</b>	<b>Session Room 3</b>
11:00	Parallel Sessions		
	Zinc Operations I	Lead Operations I	Environmental Practices I
12:40	Welcoming Luncheon (TERRSA Hall)		
14:30	Parallel Sessions		
	Zinc Operations II	Lead Operations II	Environmental Practices II
15:45	Coffee Break		
16:15	Parallel Sessions		
	Zinc Operations II	Lead Operations II	Environmental Practices II
17:55	End		

## Session Room 1

### Opening Address

9:00 Opening Address

S. Okubo (President of MMIJ, Prof., Univ. of Tokyo)

Y. Umetsu (Conference Chair, Prof., Tohoku Univ.)

### Plenary Lectures I

Chairperson: Dr. J. E. Dutrizac (CANMET-MMSL)

9:30 Shifting Patterns in Global Lead Supply and Demand

C. Hassel and H. Roberts (United Kingdom)

10:00 World Zinc Supply and Demand – Heading for a Late-Decade Price Spike –

G. Deller (United Kingdom)

10:30 Coffee Break

### Zinc Operations I

Chairperson: Prof. T. Nakamura (Tohoku Univ.)

11:00 Zinc Smelters Survey

M. Sakata, T. Imai, A. Horiuchi, K. Morita, Y. Kondo and M. Kusano (Japan)

11:25 Recent Operations and Improvements of Akita Zinc Co., Ltd.

T. Hino, H. Kai, T. Wada, Y. Shibachi, K. Saruta, Y. Kudo, H. Arima and K. Fukuda (Japan)

11:50 Asturiana de Zinc, S.A.: Recent Expansions 1999 to 2004

F. J. Tamargo (Spain)

12:15 Overview of the Operations of Canadian Electrolytic Zinc Limited

L. Rosato, G. Monteith and L. Centomo (Canada)

12:40 Welcoming Luncheon (TERRSA Hall)

<b>Zinc Operations II</b>		Chairpersons: Ms. L. Rosato (Canadian Electrolytic Zinc) Mr. T. Yoshida (Mitsui Mining and Smelting Co., Ltd.)
14:30	Recent Process Improvements in the Kamioka Zinc Plant	M. Fujikawa, M. Tanaka, K. Kishimoto, T. Anzai and S. Ikenobu (Japan)
14:55	Main Developments in Umicore Zinc Smelting	C. Geenen, R. A. Maamar and C. Eusèbe (Belgium)
15:20	Operational Improvements at Annaka Refinery Resulting from Change of Main Ore Source	A. Yamashita and E. Morita (Japan)
15:45	Coffee Break	
16:15	The Mechanism of Accretion Formation during Fluid-bed Roasting of Zinc Concentrates	D. G. Hodder (USA)
16:40	Recent Operations at Hikoshima Smelter	Y. Yamamoto and K. Nishina (Japan)
17:05	Zinc Recovery from Reclaimed Electrolytic Zinc Refining Residues	G. H. Howard, E. H. O. Meyer, N. M. Vegter, W. H. van Niekerk and J. van Deventer (South Africa)
17:30	Resin-in-Pulp for the Recovery of Zinc from Zinc Refining Residues	M. H. Kotze, J. P. Wyethe and E. H. O. Meyer (South Africa)
17:55	End	

## Session Room 2

<b>Lead Operations I</b>		Chairperson: Dr. R. Püllenber (BERZELIUS STOLBERG GmbH)
11:00	Lead Smelters Survey	T. Imai, M. Sakata, K. Morita, Y. Kondo, A. Horiuchi and M. Kusano (Japan)
11:25	Lead Operation at Kosaka Smelter	S. Satoh, N. Yamazaki and R. Togashi (Japan)
11:50	Brunswick's Modified Lead Blast Furnace	B. Leclair, Q. Jiao and P. Hancock (Canada)
12:15	Ausmelt Technology Operation at Commercial Lead Smelters	J. Sofra and R. Hughes (Australia)
12:40	Welcoming Luncheon (TERRSA Hall)	

<b>Lead Operations II</b>		Chairpersons: Dr. Q. Jiao (Brunswick Smelter) Mr. K. Sugino (Toho Zinc Co., Ltd.)
14:30	Management of KIVCET Bath Accretions	G. G. Richards, R. L. Stephens, D. W. Ashman and J. M. Kuhn (Canada)
14:55	Developing QSL Technology to an Economically Superior Process	U. Meurer, R. Püllenber and J. Griesel (Germany)
15:20	Lead Recycling at the Chigirishima Refinery	H. Ito (Japan)
15:45	Coffee Break	
16:15	Characteristics of ISASMELT Slag and Lead Blast Furnace Sinters	B. Zhao, E. Jak and P. Hayes (Australia), G. Yang, J. Wang and Y. Dong (China) B. Errington (Australia)
16:40	The ISA - YMG Lead Smelting Process	B. Errington and P. Arthur (Australia), J. Wang and Y. Dong (China)
17:05	Secondary Lead Smelting at East Penn Manufacturing Co., Inc. - Changes since 1993	R. A. Leiby, Jr. (USA)
17:30	End	

## Session Room 3

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### **Environmental Practices I** Chairperson: Mr. K. Svens (Outokumpu Technology Oy)

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- 11:00 Regeneration and Activation of the Mining Town after Mine Closure  
Y. Hosoi (Japan)
- 11:25 Environmental Policy and Practice on Abandoned Mine Site in Japan  
Y. Mochida (Japan)
- 11:50 Biological Regeneration Processes for Flue Gas in the Lead & Zinc Industry  
J. L. Huisman, H. Dijkman, G. Schouten (The Netherlands)
- 12:15 Waste Water Treatment at the Abandoned Matsuo Mine  
H. Ueda (Japan)

12:40 Welcoming Luncheon (TERRSA Hall)

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### **Environmental Practices II** Chairpersons: Dr. J. Huisman (Paques Natural Resources BV) Mr. H. Inoue (Dowa Mining Co., Ltd.)

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- 14:30 Acid Drainage from the Oxidation of Iron Sulfides and Sphalerite in Mine Wastes  
J. L. Jambor, C. J. Ptacek, D. W. Blowes and M. C. Moncur (Canada)
- 14:55 Use of Waste Precipitated Calcium Carbonate for Effluent Treatment and Impurity Control at Zincor  
J. O. Claassen, W. H. van Niekerk, J. P. Maree, G. Strobos, N. Mbhele, M. de Beer  
G. Howard and N. M. Vegter (South Africa)
- 15:20 Corrosion Rate and Wash-off Rate of Zinc from Exposed Galvanized Steel - an Update  
K. Kreislova and D. Knotkova (Czech Republic), M. G. Burcher (United Kingdom)

15:45 Coffee Break

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- 16:15 Reduction of Melted Steel Mill Dust in an Iron Bath - a "Zero Waste" Solution  
J. Antrekowitsch and A. Sprung (Austria)
- 16:40 Energy Conservation and Recovery in Non-Ferrous Metallurgical Plant Off-Gas Systems  
P. Safe and S. Matson (USA)

17:05 End

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 Memo

## Sessions on Tuesday, Oct. 18

<b>Authors' Coffee Room</b>			
08:20	Authors' Coffee		
<b>TERRSA Hall</b>			
09:00	Plenary Lectures II		
10:30	Coffee Break		
	<b>Session Room 1</b>	<b>Session Room 2</b>	<b>Session Room 3</b>
11:00	Parallel Sessions		
	Zinc Concentrate Leaching Practices	Lead Operations III	New Zinc Technologies
12:40	Lunch Break		
14:30	Parallel Sessions		
	Zinc Operations III	Lead Recycling	Zinc Electrowinning
15:45	Coffee Break		
16:15	Parallel Sessions		
	Zinc Operations III	Lead Recycling	Zinc Electrowinning
17:55	End		
<b>TERRSA Hall</b>			
19:00	Banquet		

## Session Room 1

<b>Plenary Lectures II</b>		Chairperson: Dr. A. Siegmund (RSR Technologies, Inc.)
9:00	The Zinc Industry: Challenges and Opportunities	S. Wilkinson (Belgium)
9:30	Advances in Primary Lead Smelting	R. L. Stephens (Canada)
10:00	Secondary Lead Production - A Survey of Smelters and Refineries	R. D. Prengaman (USA)
10:30	Coffee Break	
<b>Zinc Concentrate Leaching Practices</b>		Chairperson: Dr. J. Vandenhoute (Umicore Research)
11:00	Atmospheric Zinc Concentrate Leaching Technology of Outokumpu M. Lahtinen, H. Takala, K. Svens, A. Järvinen and P. Talonen (Finland)	
11:25	Zinc Pressure Leach Plant Design Based on Dynatec Mini-Pilot Plant Testwork M. J. Collins, I. M. Masters and J. Stiksma (Canada)	
11:50	The Kinetics of Sphalerite Dissolution in Ferric Sulphate-Sulphuric Acid Media	J. E. Dutrizac (Canada)
12:15	Mass Transfer between Gas and Liquid in Atmospheric Leaching of Sulphidic Zinc Concentrates	T. Kaskiala (Finland)
12:40	Lunch Break	

<b>Zinc Operations III</b>		Chairpersons: Dr. M. Collins (Dynatec Corporation) Mr. T. Hino (Akita Zinc Co., Ltd.)
14:30	Industrial Scale Roasting of Impure Concentrates at Boliden Kokkola	M.-L. Metsäranta, P. Taskinen, J. Nyberg and E. Ohvo (Finland)
14:55	Zinc and Lead Industry in Poland	Z. Smieszek, J. Mrowiec and S. Sobierajski (Poland)
15:20	Recent Development of EAF Dust Treatment Operation	K. Nagai, J. Takahashi, Y. Matsumoto, T. Koshino and K. Ikeda (Japan)
15:45	Coffee Break	
16:15	The Mitsui Recycling Furnace for Zinc	H. Sato, S. Noda and H. Nagasaki (Japan)
16:40	Production of Marketable Zinc Oxide from Electric Arc Furnace Dust	N. Takeuchi and T. Numasaki (Japan)
17:05	Development of Zinc Production at the Chelyabinsk Zinc Plant	L. A. Kazanbayev and P. A. Kozlov (Russia)
17:30	End	

## Session Room 2

<b>Lead Operations III</b>		Chairperson: Dr. G. G. Richards (Teck Cominco Metals Ltd.)
11:00	The Recent Lead Smelting of Takehara Refinery	T. Ishito, M. Akahori and T. Nitta (Japan)
11:25	Survey of Reverberatory Furnace Flue Gas Handling at Quemetco, Inc., City of Industry Plant	J. Campbell (USA)
11:50	Lead Recycling in the Blast Furnace at Kamioka Mining & Smelting Co., Ltd.	H. Yanagisawa, N. Tanabe and H. Mandokoro (Japan)
12:15	Operations at the Doe Run Company's Buick Resource Recycling Division	S. Arnold and H. J. Crouch, Jr. (USA)
12:40	Lunch Break	
<b>Lead Recycling</b>		Chairpersons: Mr. R. A. Leiby, jr. (East Penn Manufacturing Co., Inc.) Mr. K. Yamazaki (Toho Zinc Co., Ltd.)
14:30	Processing of Spent Lead-Acid Battery at Hosokura Smelter	N. Usami, T. Kagami, S. Takayanagi and F. Tanaka (Japan)
14:55	The interests of a Tilting Rotary Furnace in the Industry for Lead / Acid Battery Recycling	M. D. Millotte (France)
15:20	Recycling Wastes with Precious Metals Content in a Secondary Lead Smelter? Why Not?	Z. Kunicky (Czech Republic)
15:45	Coffee Break	
16:15	The Green Factory – Eco-Sustainable Production of Lead from Batteries	M. Olper and M. Maccagni (Italy)
16:40	Getting a Safer and Cleaner Source of Lead through the Primalead Process	C. Frías, G. Díaz, D. Martín and N. Ocaña (Spain)
17:05	Friendly Environment Technology for Processing of Sulphate-Oxidic Paste from Spent Batteries	T. Velea, V. Predica and L. Gherghe (Romania), C. Frias (Spain), A. Adjemian (Belgium)
17:30	End	

## Session Room 3

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### **New Zinc Technologies** Chairperson: Mr. M. Sakata (Mitsui Mining and Smelting Co., Ltd.)

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- 11:00 Zinc Fuming Processes for Treatment of Zn-containing Residues  
K. Verscheure, B. Blanpain, P. Wollants, M. Van Camp, P. C. Hayes and E. Jak (Belgium)
- 11:25 Water and Sodium Carbonate Leaching of EAF Dust and Waelz Oxide  
T. T. Chen, J. E. Dutrizac and G. Poirier (Canada)
- 11:50 The Hydrometallurgical Treatment of Farallon Resource's Campo Morado Bulk Zn-Pb-Cu-Ag-Au Sulfide Concentrate  
D. Dreisinger, P. Taggart, R. Banner, D. Copeland, D. Jennings and D. Whittington (Canada)  
K. Baxter (Australia), J. Ferron and A. Mezei (Canada)
- 12:15 The Development of a Solvent Extraction Process to recover Zinc from Leach Solutions  
C. Y. Cheng and M. Urbani (Australia)

12:40 Lunch Break

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### **Zinc Electrowinning** Chairpersons: Mr. C. Geenen (Umicore Zinc Smelting) Prof. H. Fukushima (Kyushu Univ.)

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- 14:30 Review of the Installation and Operation of a Fully Automatic Cellhouse at HBM&S  
T. R. Barth and T. C. A. Loat (Canada)
- 14:55 Anodic Behaviors of Pb-Ag-Ca Alloy Anodes for Industrial Zinc Electrowinning  
Y. Takasaki, H. Watanabe and K. Koike (Japan)
- 15:20 Advanced and Application of Lead Alloy Anodes for Zinc Electrowinning  
J. A. Gonzalez (Canada), J. Rodrigues (South Africa), A. Siegmund (USA)

15:45 Coffee Break

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- 16:15 Impurity Effect in Zinc Electrolysis: Classification of Impurities and Their Synergistic Effect  
H. Nakano, S. Oue, H. Fukushima and T. Ohgai (Japan)
- 16:40 Manganese Removal from Zinc Electrolytes with Sulphur Dioxide-Oxygen  
J. Wyethe and N. M. Vegter (South Africa)
- 17:05 Polymer Concrete Cell design for Zinc Electrowinning  
K. Curran (USA)
- 17:30 Effect of Casting Quality on the Electrochemical Properties of Pb-Ag Anodes for Application in the Zinc Electrowinning Process  
M. Sahoo, L. Centomo, G. Monteith, G. Champoux, G. Houlachi, S. Jin and E. Ghali (Canada)

17:55 End

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Memo

## Sessions on Wednesday, Oct. 19

<b>Authors' Coffee Room</b>			
08:20	Authors' Coffee		
<b>TERRSA Hall</b>			
09:00	Plenary Lectures III		
10:30	Coffee Break		
	<b>Session Room 1</b>	<b>Session Room 2</b>	<b>Session Room 3</b>
11:00	Parallel Sessions		
	New Technologies I	Lead and Zinc Applications	New Technologies II
12:40	Lunch Break		
14:30	Parallel Sessions		
	Oxide-Zinc Technology	ISF Technology	New Technologies III
15:45	Coffee Break		
16:15	Parallel Sessions		
	Oxide-Zinc Technology	ISF Technology	New Technologies III
17:55	End		

## Session Room 1

<b>Plenary Lectures III</b>		Chairperson: Mr. N. L. Piret (Piret & Stolberg Partners)
9:00	Advances and Challenges in Zinc Production	Y. Umetsu (Japan)
9:30	Applications of Lead	D. N. Wilson (United Kingdom)
10:00	Zinc Recycling Technologies Now and in the Future	T. Nakamura (Japan)
10:30	Coffee Break	
<b>New Technologies I</b>		Chairperson: Mr. D. G. Hodder (Zinifex Clarksville Inc.)
11:00	The Combined INDUTECH®/EZINEX® Process – A Combination of Pyro and Hydro Metallurgy to Process Zinc Bearing Secondary Materials	M. Olper and M. Maccagni (Italy)
11:25	Recovery Process and Distribution Behaviors of Lead and Zinc in Waste Treatment	J. Hino and K. Asai (Japan)
11:50	Column Flotation Applied to Silver Recovery from Lead and Silver Residue	J. A. de Aquino, W. E. de Paula Junior, M. L. M. Oliveira and T. Takayama (Brazil)
12:15	Recovery of Precious Metals by Zinc Vapor Treatment	J. Itoh, Y. Kayanuma, M. Miyake, H. Kimura and M. Maeda (Japan)
12:40	Lunch Break	

<b>Oxide-Zinc Technology</b>		Chairpersons: Dr. C. Frias (Técnicas Reunidas) Prof. Y. Awakura (Kyoto Univ.)
14:30	The Geology and Mineralogy of Nonsulfide Zinc Ore Deposits	M. Boni (Italy)
14:55	Skorpion Zinc: Defining the Cutting Edge of Zinc Refining	J. Gnoinski, T. Bachmann and S. Holtzhausen (Namibia)
15:20	The Skorpion Zinc Plant: Zincex™ Solvent Extraction – The Best Expectations Confirmed after Commissioning	M. A. García, F. S. Ruiz, A. B. Mejias and M. Frades (Spain)
15:45	Coffee Break	
16:15	Removal of Carbonaceous Materials and Magnesium from Zinc Silicate Flotation Concentrate by Treatment in Autoclave with Zinc Bearing Wash Solution	A. Dias de Souza and E. L. Martins (Brasil)
16:40	Pilot Plant Demonstration of Zinc Solvent Extraction Using The Bateman Pulsed Column at Iran Zinc Mines Development Company	D. Moradkhani, D. Bastani, M. Askari and H. Angoraj (Iran), R. Klue (South Africa)
17:05	End	

## Session Room 2

<b>Lead and Zinc Applications</b>		Chairperson: Dr. D. N. Wilson (Lead Development Associatio International)
11:00	Recent Technological Development of Lead-Acid Batteries in Japan	S. Osumi (Japan)
11:25	Effects impurities in Lead on the Gassing Currents for Sealed Lead Acid Batteries	R. D. Prengaman (USA), L. T. Lam (Australia)
11:50	Recent Progress of the Zn-coated Steel Sheets in Japan	A. Miyasaka (Japan)
12:15	Lunch Break	
<b>ISF Technology</b>		Chairpersons: Mr. A. Hair (Hudson Bay Mining and Smelting Company) Prof. T. Fujisawa (Nagoya Univ.)
14:30	Whither the Imperial Smelting Process?	R. W. Lee (United Kingdom)
14:55	Recent Operations at Hachinohe ISP Smelter	S. Azuma, K. Nakayama and Y. Sato (Japan)
15:20	Identification of the Dynamics of an Imperial Smelting Furnace (ISF)	M. A. Reuter and A. van Schaik (The Netherlands), B. Schwab and J. Manthey (Germany)
15:45	Coffee Break	
16:15	Improvement of ISP Operation at Sumitomo Harima Smelter	H. Sasaki and T. Kudo (Japan)
16:40	Improvements in ISF Performance through Sinter Structure and Slag Optimisation	B. Zhao, E. Jak, P. C. Hayes and R. Holliday (Australia) R. Lee (United Kingdom)
17:05	Zinc Calcine Injection-Reduction Process Using a Blast Furnace	F. Tanno, K. Matsuzaki, A. Fuwa and A. Watanabe (Japan)
17:30	End	



## Session Room 3

### **New Technologies II**

Chairperson: Prof. A. Fuwa (Waseda Univ.)

- 11:00 Phase relations and Distribution of Precious Metals in Pb-Fe-As and Pb-Fe-Sb Systems Saturated with Carbon at 1473 K  
L. Voisin, H. M. Henao, M. Hino and K. Itagaki (Japan)
- 11:25 Thermodynamics of the Alkali-Lead Oxychloride System  
S. Yamaguchi, Y. Oyama and Y. Wakimoto (Japan)
- 11:50 Fundamental Study Related to New Zinc Distillation Process Utilizing Zinc Sulfide Reaction with Metallic Copper  
S. Itoh and A. Kikuchi (Japan)
- 12:15 Ecological Recovery of Zinc from Fly Ash Using Microbes Associated with the Sulfur Cycle  
Y. Konishi, N. Saitoh, T. Nomura and S. Nagamine (Japan)

12:40 Lunch Break

### **New Technologies III**

Chairpersons: Prof. P. C. Hayes (Univ. of Queensland)  
Prof. Y. Umetsu (Tohoku Univ.)

- 14:30 Phase Relations of the Oxide Phases in Partial Lead Softening with Oxygen  
S. Firoozi and R. Harris (Canada)
- 14:55 Behavior of Minor Species during Oxidation Smelting of Lead Concentrate  
K. Yamaguchi (Japan), D. R. Swinbourne (Astralia), A. Yazawa (Japan)
- 15:20 Electrothermal Technology for Processing of Complex Polymetallic Raw Materials - Effective Way for Increasing Lead and Zinc Production  
A. V. Tarasov and A.D. Besser (Russia)

15:45 Coffee Break

- 16:15 Environmental Impact Assessment of Zinc Alloy Ingot Manufacturing Process in East Slovakia Region  
E. Vircikova and L. Molnar (Slovakia)
- 16:40 Electric Arc Furnace Dust Treatment by Methane  
S. Polsilapa (Thailand), D. R. Sadedin, A. K. Kylo and N. B. Gray (Australia)
- 17:05 Sulfide Capacities of PbO-SiO<sub>2</sub> and PbO-SiO<sub>2</sub>-AlO<sub>1.5</sub>(Sat) Slags  
B. Derin and O. Yücel (Turkey), R. G. Reddy (USA)
- 17:30 Recycling of Hot Dip Galvanizing Ash  
J. Jandová, P. Dvořák and H. N. Vu (Czech Republic)

17:55 End

Memo