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# 32nd Annual Conference of Precious Metals

## HIGHLIGHTS FROM THE IPMI'S ANNUAL TECHNICAL CONFERENCE

By Larry Manziek

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The International Precious Metals Institute (IPMI) (1) held its annual technical conference from 8th–10th June, 2008, in Phoenix, Arizona, U.S.A. The conference theme was "Precious Metals and Technology During Volatile Times", and session topics included 'Precious Metals and Regulations', 'Precious Metals and Economics', 'Analysis, Refining and Recovery of Precious Metals' and 'Precious Metals Process Technology', among others. Over 500 delegates attended the conference, coming from the U.S.A., Canada, Mexico, Europe, Asia and Africa. Summaries of selected presentations relevant to the platinum group metals (pgms) are given here.

## Regulations and Markets for Precious Metals

Sessions A, B and C began on Sunday 8th June, just after the members' and Board of Directors' meetings had concluded. In Session A, entitled 'Precious Metals and Regulations', Mike Riess (Materials Management Corporation, U.S.A.), who was also the session moderator, discussed the 'Long Arm of Anti Money Laundering Laws', in which he covered the sensitive and highly current issue of the U.S. government's inclination and ability to reach beyond its borders for violators. Next, John Bullock (Attorney, private practice, U.S.A.) talked about 'International Organizations and Precious Metals Regulation'. He cited as an example the Financial Action Task Force (FATF), a thirty nation group that promotes anti-money laundering and counter terrorist finance programmes around the world, and has issued recommendations that encompass dealers in precious metals. Ernie Baca (Department of Homeland Security, U.S.A.) then spoke about 'Trade Based Money Laundering', and at the end of the Session, Caroline Braibant (European Precious Metals Federation (EPMF)) discussed the new European regulations on Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), in her presentation, 'What's New – Are You Ready for REACH?', see also (2).

In Session B, 'Precious Metals and Economics', the session moderator Bodo Albrecht's (BASIQ Corp, U.S.A.) topic was 'The World is Round and What It Will Take to Stay on Top'. He explained why a long-term vision is becoming ever more important, and how such a vision can be strategically developed. He cited case studies of significant market shifts affecting the industry to demonstrate why unrelated events need to be incorporated for the long-term path. Emory De Castro (BASF Fuel Cell, U.S.A.) then discussed 'Precious Metals in Fuel Cells'. As the generation of power has become burdened with environmental costs, alternative but highly efficient methods are being sought. The pgms play an important role in the clean, efficient production of electricity from fuel cells, as well as in the production of hydrogen from carbon-containing fuels. Concluding this session on economics was Bill Tierney (Computer Associates, Inc, U.S.A.) who presented 'Finding Markets for Your PM Inventory'. Tierney reviewed the inventories, growth forecasts and issues impacting the gold, silver, platinum and other precious metal markets, covering both entrenched uses of the metals and emerging industrial applications. He emphasised customer-focused programmes in which refiners offer customer managed inventory, with monthly reporting and built in reorder points.

Session C was the 'Ask the Experts Panel Discussion'. Among the panel were Steve Ferguson (Via Mat International, Switzerland),

Nish Clarke (Clarke Securities), Carol Tyler (BRM Services, U.S.A.) and Paul Parkinson (Towers Perrin Claytons, U.S.A.). These experts in the precious metals industry gave tips and discussed ways of keeping precious metals secure, whether stored at the company's facility or en route to a customer.

## Refining and Recovery

Session D, 'Analysis, Refining and Recovery of Precious Metals', began on Monday 9th June, and was moderated by Malkit Basi (Ledoux & Co, U.S.A.). The session started with Uli Blankenstein (Heraeus Metal Processing, Germany) who discussed 'Heraeus Metal Processing & Reforming Catalyst'. He discussed Heraeus's two processing plants, one in Germany and the other in the U.S.A. Each plant has environmental experts to guide clients on pre-shipment testing for proper classification, traffic managers to assist customers with logistics, and state-of-the-art sampling. Christian Hagelueken (Umicore, Germany) approached the podium next with a presentation entitled 'The Magic Money Carousel – Beware of Tricks in Autocat Recycling'. Hagelueken warned delegates that although booming pgm prices had stimulated the autocatalyst recycling industry, with volumes rising for refiners, there was also an increased risk of doubtful business practices being used. Dishonest players exercise remarkable creativity to make money from autocatalyst recycling, but there are ways to identify them and prevent these questionable activities.

Joachim Prior (Prior Engineering, Switzerland) then outlined 'Best Practice in Silver Refining – Bulk Material Electrolysis Technology and Closed Loop Processing of Spent Silver Electrolyte'. He spoke of the proper bulk electrolysis technology that allows online extraction of anode slime, resulting in faster access to gold/palladium without interrupting the electrolysis cell production. Next, Steve Izatt (IBC Advanced Technologies, U.S.A.) focused his presentation on 'The Commercial Application Superlig® Molecular Technology Products to Recycling of Potassium Gold Cyanide from Spent Gold Plating Solutions'. He explained that the molecular recognition technology (MRT) process enables recovery of the potassium gold cyanide directly from spent plating solution and conversion into a saleable product. It reduces processing time, eliminates a number of unit operations and results in major cost savings. Martin Bousa (SAFINA, Czech Republic) closed the session with his discussion on 'Precious Metal Catalysts Treatment in Plasma Heated Reactors'. He specifically focused on PlasmaEnvi®, a process developed at SAFINA which uses a direct-current plasma reactor for the recovery of precious metals from spent refinery catalysts (Figure 1). This process enables the treatment of each lot under separate regimes, and leads to short metal lock up time in the recovery process and fast metal turnover.

## Process Technologies

Session E, 'Precious Metals Process Technology', also ran on Monday morning and the moderator was Robert Jacobsen (Sabin Metal, U.S.A.). The first to speak in the session was Corby Anderson (CAMP Montana Tech, U.S.A.). His paper, 'Hydrogen Purification with a Pd Membrane' explained that hydrogen is uniquely soluble in bulk palladium and can pass through the metal. A structurally sound palladium-based membrane can therefore be used to separate highly

*Fig. 1 Direct-current plasma arc reactor used in the PlasmaEnvi® process for the recovery of precious metals from spent refinery catalysts (Courtesy of Martin Bousa, SAFINA, Czech Republic)*

pure hydrogen from other gases. There is great interest in fuel processing technologies such as steam reforming of methane into $H_2$ and $CO_2$, and a thin palladium membrane can play an important role in these processes. Robert Ianniello (BASF Catalysts, U.S.A) then talked of 'New Trends in the Use of PMs for Industrial Heterogeneous Chemical Catalysis'. The first industrial application of chemical catalysis was in 1875, for the production of sulfuric acid on platinum catalysts. However, in the last ten years tremendous strides have been taken in optimising the activity and selectivity of industrial chemical catalysts, through greater understanding of structure-property relationships of the active metal, support and reactant systems. In most of these studies, precious metals provide unique advantages over base metals in terms of activity, selectivity and stability.

Next, David Lupton (Heraeus, Germany) gave his presentation on 'Platinum Equipment from Heraeus Global Glass Industry'. His talk reviewed the main features of the expertise and infrastructure available for the manufacture of state-of-the-art glass making equipment (Figure 2). Jan Jiskra (Weiland Dental, Germany) explained 'Highly Ecological Detoxification Process of Cyanide through High Temperature Hydrolysis'. He discussed Weiland's development of an industrial process for the high-temperature hydrolysis of cyanide compounds, which avoids many of the disadvantages of other cyanide detoxification processes. The most stable cyanide complexes can be removed to below the detection limit. Mitch Coughlin (Colt Refining, U.S.A.) then introduced 'The Ox: New Incineration Capabilities at Colt Refining'. Coughlin talked about Colt's thermal processing techniques for the recovery of precious metals from combustible waste, including "The Ox", a thermal oxidation system for the incineration of large amounts of precious metal-containing combustibles in a controlled environment (Figure 3).

## Economics of Precious Metals

Session F, 'Precious Metals and Economics II', moderated by Phyllis Casey (Sovereign Bank, U.S.A.), started with Bodo Albrecht (BASIQ Corp, U.S.A.). His paper, 'It Takes a Thief – Expose Your Vulnerabilities before Someone Else Does' introduced a new approach to security, focusing on the increasing importance of data security in today's business environment. His talk presented case studies of attempted simulated attacks made by professionals, with the clients' blessing, in order to uncover the vulnerabilities and raise awareness in corporations. Dmitry Shulgin (JSC Krastsvetmet, Russia) outlined 'JSC: 65 Years'. JSC Krastsvetmet, one of the world's largest precious metal refineries, is celebrating sixty-five years in the precious metals industry. Shulgin gave a narrative on the formation, decisions, new technology and approaches that the non-ferrous metals plant has made in the

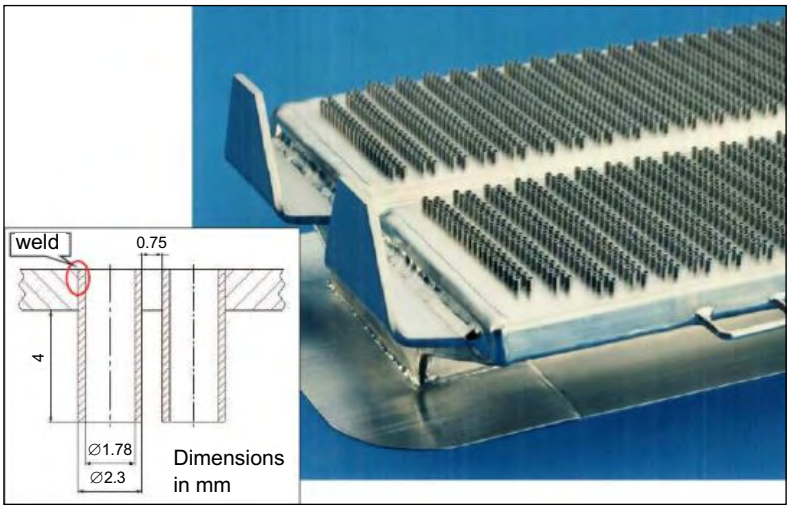


*Fig. 2 Precision welding of tips in a platinum bushing for glass fibre manufacture (Courtesy of David Lupton, Heraeus, Germany)*

*Fig. 3 "The Ox", a thermal oxidation system for the incineration of precious metal-containing combustibles (Courtesy of Mitch Coughlin, Colt Refining, U.S.A.)*

last sixty-five years. Rohnn Sanderson (2006 IPMI Sabin Metal Business Student Award Recipient) gave an overview of his research on 'Precious Metal Pricing' and why it is constantly changing. The last paper in this economics session was presented by Elisa Alonso, a graduate student at MIT, U.S.A. Her topic was 'A Dynamic Simulation Model for Examining the Implications of Limited Materials Availability: The Case of Platinum'. Her research covers the development and application of a simulation model to examine scarcity risks to firms in the downstream supply chain. Her model tries to capture the dynamics of platinum market supply, demand and price.

## Sampling and Analysis

Session G, on Tuesday 10th June, was a 'Sampling Workshop' led by John Tully (Glen Mills Inc, U.S.A.). Presenters included Kyle James (Retsch US, U.S.A.), discussing 'Lab Sampling Techniques', and Bob Jacobsen (Sabin Metals) with 'Sampling of Spent Petroleum Catalysts'. John Tully discussed 'Fundamentals of Sample Prep – Sampling and Sample Prep from Bulk to Analysis' and 'Future Trends in Lab Sample Prep – Ultra Fine Grinding and Automation'. Session H, also on Tuesday, was totally focused on silver and was hosted by the Silver Users Association.

Session I, 'Precious Metal Analysis', was moderated by Carmen Arbizo (Inspectorate, U.S.A.). Paul Blumberg (Inspectorate) discussed 'Rhodium Assaying' and emphasised its challenging chemistry, due to the various rhodium species present in hydrochloric acid (HCl) solutions and the absence of a specific reagent for rhodium. Steven Cooke (Sabin Metal) next presented 'Matrix Effects Using ICP-AES'. He spoke of the difficulty of understanding matrix effects in ICPES, discussing both spectral overlap and plasma related effects. He outlined techniques to minimise these effects for the analysis of noble metals. Steve Izatt (IBC Advanced Technologies) presented 'Use of Analig® Molecular Recognition Technology Products for Analysis of Platinum Group Metals'. He discussed the critical need for more efficient and effective analytical methods due to the growth of pgm refining and recycling. He further discussed IBC's development of a method for pgm sample preparation using MRT in a cartridge format for rapid detection by ICPES.

Yuan Jin Lei and Zai Fu Pan (Sino Platinum, China) presented 'A Study of Novel Bifunction Catalytic Sensor'. They presented the results of their research showing that a novel type of bifunctional sensor for combustible gases exhibited excellent sensitivity, linearity, stability and poison resistance. The sensor incorporates a catalytic element, prepared by coating a precious metal catalyst onto precious metal wires, and a thermal

conductivity element. It can precisely determine combustible gas levels between 0–100% (v/v) and the operating life is three years.

## Conclusions

This conference highlighted many aspects of the precious metals industry, from regulations, markets and economics to analysis, refining and recovery. Important areas of industrial application of the pgms were also discussed, including catalysis, fuel cells and glass production technology. The Proceedings of the IPMI 32nd Annual Conference are available to purchase on CD-ROM through the IPMI (1). The 33rd Annual Conference of Precious Metals will be held from 13th–16th June, 2009, in Orlando, Florida, U.S.A.

### References


1 IPMI: International Precious Metals Institute: http://www.ipmi.org/

2 European Precious Metals Federation, Reach Regulation: http://www.epmf.be/index.php?option=com_content&task=view&id=8&Itemid=15


**The Reviewer**

Dr Larry Manziek received his B.S. in Chemistry from the University of West Florida, U.S.A., in 1970; his M.S. in Environmental Engineering from the University of Florida in 1974; and his Ph.D. in Inorganic Chemistry from the University of Florida in 1976. After completing his graduate studies, Dr Manziek joined the Rohm and Haas Company as a Senior Research Scientist at their corporate research centre in Spring House, Pennsylvania. Dr Manziek's research covered many areas: ion exchange technology, functional polymer synthesis, precious metal extractive metallurgy, selective precious metal recovery from complex aqueous solutions, catalyst design and micro-engineered inorganic materials. Dr Manziek received the distinguished Otto Haas Award for Scientific Achievement during his tenure with Rohm and Haas, and retired from the Rohm and Hass Company as a Senior Research Fellow in 1998. Following his retirement, Dr Manziek assumed the Executive Director position of the International Precious Metals Institute and remains in that capacity.