IPMI®
INTERNATIONAL PRECIOUS METALS INSTITUTE®
connecting you to the world of precious metals™

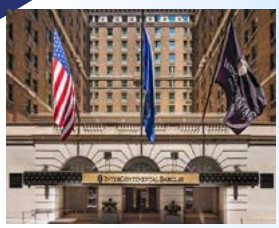
Precious Metals News

Volume 45, Number 7 July 2021

IPMI's 8th Annual Platinum Dinner

Sponsored by the
International Precious Metals Educational and Scientific Foundation

Thursday, September 30, 2021



Intercontinental New York Barclay Hotel
111 East 48th Street , New York NY 10017

Featured Speaker:
Trevor Raymond
World Platinum Investment Council

"Platinum Group Metals: The Next 15 Months and The Next 15 Years"

Cocktail Reception Sponsored by Heraeus

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45th Annual Conference

October 6-9, 2021 · Reno, Nevada

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AAA Four Diamond Award

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Contact: Sandra Arrants, International Precious Metals Institute
850-476-1156, or email mail@ipmi.org

2021 IPMI Student Award Winners Announced

IPMI Student Award

Jannick Vercammen, KU Leuven, Belgium

Jannick Vercammen studied Bioscience Engineering at KU Leuven with a specialization on catalytic technology. He performed an industrial internship at Umicore during his study. Currently, he is a PhD Researcher in the group of Prof. Dirk De Vos with a fellowship from FWO, Flanders. His research focuses on the development of new concepts for the functionalization of aromatics. Title of research: Novel Concepts for the C-H Functionalization of Aromatic Compounds

Jannick's Mentor is this year's winner of the IPMI Student Advisor Award, Dirk De Vos, KU Leuven, Belgium

IPMI Europe Chapter Student Award

Peter Bellotti, WWU Münster Germany

Peter Bellotti graduated cum laude in chemistry from the University of Milan (Italy) under the supervision of Professor Cesare Gennari. While completing his M.Sc. in Advanced Synthesis & Catalysis at the University of Regensburg (Germany) in the research group of Professor Burkhard König working on visible-light carboxylation reactions, he joined Hoffmann-La Roche pRED, Basel (Switzerland) for one year in industry, focusing on cancer and neurodegenerative diseases. In 2019, he started his Ph.D. in the group of Professor Frank Glorius, focusing on visible-light photocatalysis and NHC on-surfaces. Title of research: The use of Precious Metals in Visible Light Photocatalysis

IPMI Colonial Metals George Benvegno Memorial Student Award

Kathleen Riley, University of North Carolina, Chapel Hill

Kathleen Riley graduated summa cum laude with a B.S. in Chemistry from Mississippi State University. Her undergraduate research was focused on Cu-catalyzed aziridinations under the supervision of Dr. Joseph Emerson. In the summer of 2017, Kathleen was awarded a LANDO Fellowship for summer research at the University of Minnesota where she worked with Dr. Connie Lu. Now, Kathleen is pursuing her doctoral degree under the supervision of Dr. Michel Gagne. Her research is focused on using group 10 metal complexes to invert bond polarization of formally X-type ligands to exhibit X+ behavior. Title of research: Initiating X+ Reactivity through Inverse Bond Polarization of the Pt–X Bond

IPMI Sabin Metal Ron Bleggi Student Award

Sho Fujita, Queen's University, Canada

Sho Fujita is a fourth-year Ph.D. candidate in the Department of Chemistry at Queen's University in Canada and currently pursuing his research on the synthesis, design, and characterization of nanomaterials for microscopic rechargeable batteries under the supervision of Dr. Gregory Jerkiewicz. He completed his B.Sc. in Engineering and M.A.Sc. in Chemical Engineering at Yokohama National University in Japan under the supervision of Dr. Shigenori Mitsushima. During his Master's program, he devoted to the research through a collaboration with industrial companies on the degradation mechanism and enhanced electrocatalytic activity of lithium-doped nickel oxide anodes for the use in alkaline water electrolyzer. His research interests lie in electrochemistry, electrocatalysis, and surface science. Title of research: Synthesis and Characterization of Structured Palladium Nanoparticles for Microscopic Rechargeable Batteries .

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Student Award Winners, continued from page 2

IPMI Metalor Student Award
Elaine Reichert, MIT
Elaine C. Reichert was born in St. Louis, Missouri. She received her A. B. in Chemistry and Physics from Harvard University in 2018. As an undergraduate research assistant in the lab of Prof. Eric Jacobsen, she studied hypervalent-iodine-catalyzed fluorination. Currently, Elaine is an NSF Graduate Research Fellow under the guidance of Prof. Steve Buchwald at MIT, where she develops new catalysts for Pd-catalyzed cross-coupling reactions. Title of research: Consideration of Catalyst Stability Guides the Development of a Pd-based Aryl Amination Catalyst with Broad Scope.

IPMI Gero Family Trust Bright Futures Student Award - *Sasha Ebrahimi, Northwestern University*
Sasha Ebrahimi earned his PhD as a Ryan Fellow in the Department of Chemical Engineering and the International Institute for Nanotechnology at Northwestern University working with Professor Chad Mirkin. He previously earned his B.S. summa cum laude from the University of Illinois at Urbana-Champaign with Highest Distinction in Chemical Engineering. His research has focused on the development of chemical tools that allow one to detect diseases, such as cancer, early. His efforts have led to the development of two new-classes of DNA-based probes which have opened new opportunities in live-cell analysis. Sasha is also passionate about training and mentoring the next generation of scientists, especially those from marginalized groups. For his research and mentorship, Sasha has been recognized with the Lurie Comprehensive Cancer Center H Foundation Fellowship, the Terminal Year Fellowship, the first place award at the AIChE annual meeting in the Student Competition in Biosensors, and the Outstanding Mentor Award from Northwestern University. Title of Research: Engineering DNA-based Materials for the Analysis of Live Single Cells.

IPMI Johnson Matthey Student Award - *Lucas Oxtoby, TSRI*
Lucas Oxtoby is a fourth-year graduate student in Professor Keary Engle's lab at Scripps Research in La Jolla, California. His research is focused on developing novel organometallic methodology using palladium catalysis. He earned his undergraduate degree at University of Wisconsin-Madison. Title of Research: Palladium-Catalyzed Alkene Functionalization Enabled by Transient Directing Groups.

Peppermill Student Award
Cindy Zheng, Northwestern University
Cindy Zheng is a fourth year chemistry graduate student advised by professors Chad Mirkin and George Schatz at Northwestern University. Before coming to Northwestern, she obtained a B.S. in Chemistry from the University of California, Berkeley. Title of research: Colloidal Crystal Metamaterials Engineered with DNA.

PREMIER PROFILE

Hensel Recycling: Spotlight on Palladium Member

Your first choice – **Hensel Recycling** is your first choice when it comes to recovering precious metals. It doesn´t matter whether they´re from catalytic converters, electronic scrap or other materials. We listen carefully to what you say, offer solutions tailored to your needs and react fast. Let us do the job to make you feel safe.

Please visit us for further information at
www.hensel-recycling.com

Hensel Recycling
Mühlweg 10
63743 Aschaffenburg / Germany
Telefon: +49 6028 12 09 0
E-Mail: info@hensel-recycling.com

hensel recycling

your first choice

Foundation:	1998
Headquarters:	Aschaffenburg
Employees:	approx. 150 – Germany (Aschaffenburg, Karlstein) approx. 220 - worldwide
Subsidiaries:	Australia, France, Great Britain, Malaysia, Austria, South Korea, USA, China (Joint Venture)
Sales Offices:	South Africa, Czech Republic
Services:	purchasing, toll refining, fast settlement, analysis & determination, logistics, precious metal management
Materials:	catalytic converter from automobile and industrial applications, diesel particulate filters, oxygen sensors, e-scrap, cable harnesses, fuel cells, aluminium rins, etc.
Certificates:	certified waste management company in accordance with § 56 of the German Closed Substance Cycle and Waste Management Act (KrWG), German law on imission protection (BImSchG), DIN EN ISO 9001:2008, DIN EN ISO 14001:2009
Memberships:	ARA, BIR, BVMW, BVSE, FVEM, IPMI, MVDA

Platinum Dinner Featured Speaker: Trevor Raymond

Trevor leads research and investor development for the World Platinum Investment Council (WPIC). He joined from Anglo American Platinum where he was the Head of Market Intelligence and Market Relations.

A precious metals specialist with over 30 years' experience in the equity and metals market, Trevor moved into the platinum industry in 2000 following 17 years in gold mining, which saw him undertake roles in engineering, mineral economics and corporate finance.

Trevor was Anglo American Platinum's Head of Investor Relations until 2008 when he joined the platinum marketing team in London to focus on commodity research and market development.

metallix

REFINING REDEFINED

Sustainable practices & sharing responsibility

'Society grows great when we plant trees, in whose shade we do not expect to sit.'

Advanced air-pollution control & air-handling systems

> At Metallix, we believe that our industry has a meaningful role to play in helping to protect the environment, both today and for future generations.

Changes to our climate and depletion of our natural resources are accelerating and we have a shared responsibility to act – by mitigating our own impact and working hard to leave a lasting and positive legacy.

We are making important changes right now, and have further plans in place to introduce a number of innovations which support emission reduction and improve resource efficiency.

WHAT WE'RE DOING WITHIN THE PLANT

- Introducing electric vehicles within our fleet.
- Eliminating wood pallets and using steel reusable ones, reducing landfill waste.
- Using recycled drums.
- Installing motion sensor lighting.
- Installing chillers to recycle water.
- Controlled and dialed in recipes for product processing reducing wasted energy.

OUR FUTURE PLANS

- Implement decarbonization plans in our plant development projects.
- Introduce systems to meter, monitor and control energy consumption across the plant and our locations.
- Continue investing in environmental initiatives like World Ocean Day and Planting Sea Grass.
- Communicate our aims and progress both internally and externally.

HELP US TO HELP YOU

Metallix is the leading company in the processing of materials containing precious metals, and when you work with us, we will ensure that your assets are recycled efficiently and cleanly while maximizing the value you receive for your precious metals. Our team of academic professionals will work with your business, guiding you through a recycling development program which is aligned and tailored to your business and product needs.

Metallix receives, recycles and buys materials from around the world, and as a trusted recycling partner, we provide expert, end-to-end support, including full environmental compliance, ensuring a seamless transaction for all our partners.

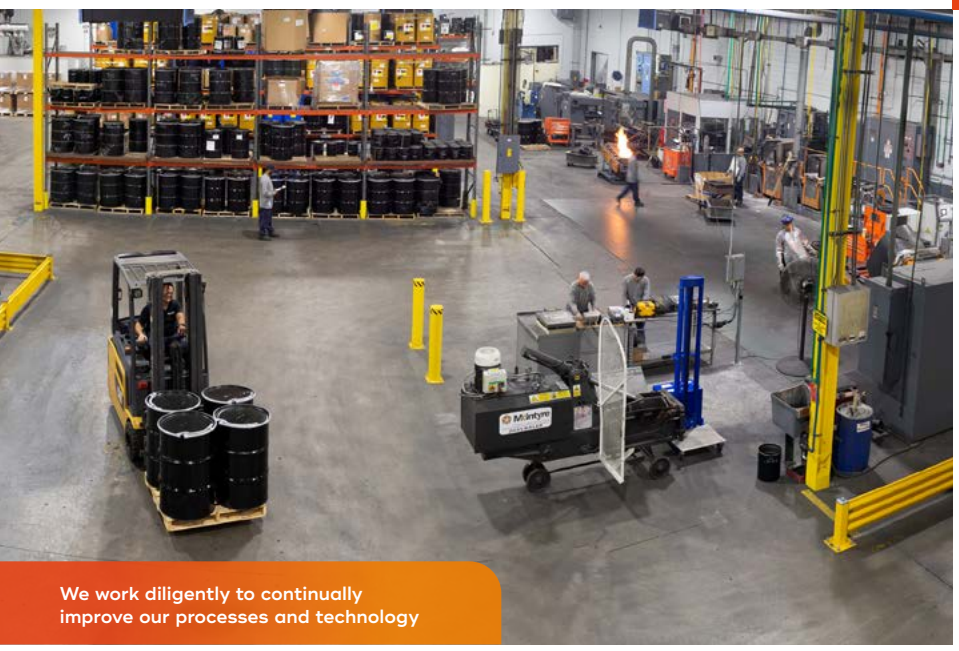
PROCESSING AND REFINING

- Thermal reduction
- Mechanical reduction
- Precious metal foundry for gold, silver and PGMs
- Extensive wet chemistry capabilities
- Analytical laboratory

Precious Metal Review Board

BENEFITS OF WORKING WITH US

- Dedicated account management
- Tailored recycling program
- CCTV with 24 hour site security
- Metal purchase or transfer
- Carbon elemental analysis
- In-house EHS Department
- Logistics



We work diligently to continually improve our processes and technology

CONTACT US TO DISCUSS YOUR REQUIREMENTS

When we work together, we can achieve more – today, tomorrow and in the future.

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sales@metallix.com

Registration for the Next European Chapter November Seminar is Open!

28 - 30 November 2021
Dublin, Ireland

Our 5th annual Seminar will take place at the Clontarf Castle Hotel, 10 minutes from the city center of Dublin, Ireland, from Sunday 28 November to Tuesday 30 November 2021.

After almost 2 years without any event in Europe in the precious metal industry, we finally will be able to meet and network again! To maximize the experience and render it as safe as possible, we have chosen a venue where all 111 rooms will be reserved for our participants, and secured a nice flat rate with an option to extend your stay before/after the conference.

Register early for the Seminar: we have been fully-booked for the last 3 seminars, and with a smaller capacity in 2021, we definitively will have a full house this year, too. An early bird rate is now available!

IPMI European Chapter members & IPMI members, contact us for the discount code!

www.tickettailor.com/events/ipmi

Precious Metals Market News

Gold

- **There is Still Mettle Left in the Precious Metals**
  - Despite the recent selloff, we judge that the Fed's continued emphasis on its full employment mandate should see gold recover most of its recent losses. The relatively new flexible ave. inflation targeting policy framework and the implied willingness to overshoot inflation targets for a period, should the output gap remain wide, are just a few reasons why easy monetary conditions will persist into 2023. The US central bank should keep real interest rate environment highly accommodative across the yield curve for a prolonged period, which is gold and precious metal complex supportive.

https://www.sbma.org.sg/media-centre/publication/crucible-issue-18/there-is-still-mettle-left-in-the-precious-metals/

- **Gold Logs Best Week in 7 as Delta Variant Risks Loom**
  - "We do continue to have issues with the Delta variant. That may very well slow economic progress, not only in the United States, but of course around the world," said Bart Melek, head of commodity strategies at TD Securities.
  - "As investors get convinced that the U.S. Federal Reserve indeed is targeting full employment and that it's not particularly worried about inflation moving above targets for a period, we could see gold's move over $1,850 by year-end."

https://m.economictimes.com/markets/commodities/news/gold-logs-best-week-in-7-as-delta-variant-risks-loom/articleshow/84287822.cms

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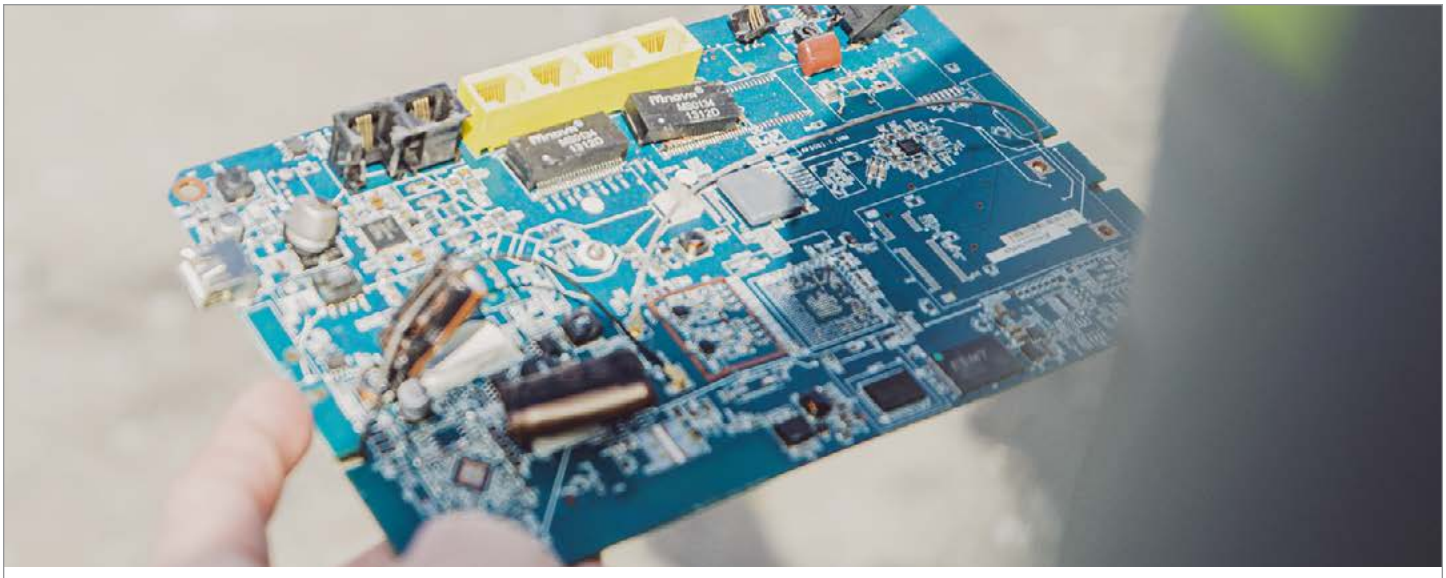

Precious Metals Market News, continued from page 9

Silver

- **'Polysilicon Shortage Will Continue Through 2021' - PV Magazine International**
  - The world will break the 200 GW (new installation) barrier for new solar next year, two years earlier than predicted by the lobby group a year ago, by adding 203 GW, and a further 225 GW will come online in 2023; 239 GW in 2024; and 266 GW in 2025. That would add up to a global solar generation fleet of 1.8 TW by the middle of the decade, with the 1 TW mark passed at some point next year. SolarPower Europe added that its optimistic forecast scenario, the world could have 2.15 TW of solar by the end of 2025, especially if mooted green hydrogen generation plants begin to take shape during that period.

  https://www.pv-magazine.com/2021/07/22/polysilicon-shortage-will-continue-through-2021/

- **DKEM Reportedly to Acquire DuPont PV Silver Paste Business**
  - DK Electronic Materials, one of the two largest China-based makers of conductive PV silver paste used in production of solar cells, will invest CNY1.247 billion (US$192 million) to acquire DuPont's silver paste business, including patents, according to Chinese media reports.
  - DuPont, Germany-based Heraeus, South Korea-based Samsung SDI and Taiwan-based Giga Solar Materials used to be major suppliers of PV silver paste, the sources noted. As Chinese solar cell makers together have had a global market share of about 85%, Chinese PV silver paste makers have emerged since 2017, the sources said.

  https://digitimes.com/news/a20210720PD203.html

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Precious Metals Market News, continued from page 10

Platinum

- **PGMs: Supply Security and The South African Connection**
  - In the PGM world, S. Africa is responsible for 78% of global Pt and 37% of global Pd production. The recent rioting and looting on the back of the arrest of former president Jacob Zuma once again highlights the potential for disruption to S. African supply of key minerals. In 2020 S. African mining disruptions from power outages and Covid-related mining closures resulted in Pt and Pd production declining ~25% and 13% respectively. Whilst it appears that the recent rioting has not affected the production of Pt and Pd, the widespread violence disrupted ports in Durban and Richards Bay, as well as key rail lines between Johannesburg and Durban, and the N3 highway connecting Gauteng and KwaZulu-Natal provinces. Is there a risk premium on supply of S. African PGMs and do the supply forecasts for the clean energy metals incorporate the risks of disruption in emerging markets?

  https://www.linkedin.com/pulse/pgms-supply-security-south-african-connection-hamad/

- **Hydrogen Council: Hydrogen Insights 2021 - July 15th Update**
  - An updated perspective on hydrogen investment, market development & momentum in China
  - Global hydrogen was previously $300 billion USD in investment on 296 projects, now is $500 Billion USD ion investment with 359 H2 projects globally with 69 GW of clean hydrogen by 2030. 6,700,000 mtpa of Green Hydrogen or 6.7 billion kg H2/ year from 43 GW of green electrolyzers

  https://hydrogencouncil.com/wp-content/uploads/2021/07/Hydrogen-Insights-July-2021-Executive-summary.pdf

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Precious Metals Market News, continued from page 11

Palladium

- **China's Auto Sales up 27% in 2021, but Hurt by Chip Shortage**
  - An industry group says China's auto sales rose 27% in the first half of 2021 from a year earlier but still were below pre-pandemic levels.

  https://www.usnews.com/news/business/articles/2021-07-09/chinas-auto-sales-up-27-in-2021-but-hurt-by-chip-shortage

- **Toyota Launches Aqua Hybrid With Bipolar Nickel-Hydrogen Battery | Engine + Powertrain Technology International**
  - Toyota has announced the release of a new model for the Japanese market. The Aqua (known as the Prius C in other markets) is said to be around 20% more fuel efficient (WLTC) than the previous-generation vehicle. With a fuel efficiency of 3.4 l/100km, the Aqua's powertrain consists of a highly efficient 1.5-liter Dynamic Force engine and an optimized HEV system. It is claimed to be the first vehicle to use a high-output bipolar nickel-hydrogen battery as an electric drive battery.

  https://www.enginetechnologyinternational.com/news/hybrid-powertrain-technologies/toyota-launches-aqua-hybrid-with-bipolar-nickel-hydrogen-battery.html

Mining

- **The Scale of the (S. African Riots) Destruction**
  - Early estimates from some of the major players are in - and the numbers are huge.
  - On Friday night, President Cyril Ramaphosa referenced "preliminary reports compiled by NatJoints" which said "extensive damage has been caused to 161 malls and shopping centers, 11 warehouses, 8 factories and 161 liquor outlets and distributors".
  - Earlier in the week, the South African Property Owners Association (Sapoa) said "some 800 stores have been looted and 100 malls have been either been burnt down or have suffered significant fire damage and a number of distribution centers particularly in Durban, KwaZulu-Natal, have been looted with serious structural destruction". Both the NatJoints & Sapoa figures are on the low side.

  https://www.moneyweb.co.za/news/companies-and-deals/the-scale-of-the-destruction/

Please see our IPMI.org website IPMI & Industry News for a complete listing of news articles relative to the world of precious metals.

BASF Expands Chemical Catalyst Recycling Capacity and Capability

- BASF acquires Zodiac Enterprises LLC assets in Caldwell, Texas
- Acquisition will grow BASF's circular economy business in catalyst recycling
- Complements BASF's precious metal recycling in Seneca, South Carolina

BASF has expanded its chemical catalyst recycling capacity and capability with the acquisition of Zodiac Enterprises LLC in Caldwell, Texas. The site recycles precious metals from industrial scrap, primarily chemical catalysts, and will complement BASF's existing precious metal recycling operations in Seneca, South Carolina. It will also provide increased smelting capacity in North America. Additional personnel will be hired to expand the site's production capabilities.

This investment allows us to meet the increased customer demand for recycling spent chemical and automotive catalysts, said Tim Ingle, Vice President, BASF Precious Metals Refining, Chemicals & Battery Recycling."We are proud to enable the circular economy since recycling metal emits as much as 90 percent less CO2 than refining primary metal from a mine."

The additional smelting capacity at the Caldwell site will help utilize the recently announced refinery expansion in Seneca. Recycled catalysts go through smelting and are then refined to produce the high purity precious metal needed to make fresh catalysts.

To learn more about BASF's recycling business, visit www.catalysts.basf.com/pgm and to apply for an open position in South Carolina, visit www.basf.us/sc.

About BASF's Catalysts Division

BASF's Catalysts division is the world's leading supplier of environmental and process catalysts. The group offers exceptional expertise in the development of technologies that protect the air we breathe, produce the fuels that power our world and ensure efficient production of a wide variety of chemicals, plastics and other products, including advanced battery materials. By leveraging our industry-leading R&D platforms, passion for innovation and deep knowledge of precious and base metals, BASF's Catalysts division develops unique, proprietary solutions that drive customer success. Further information on BASF's Catalysts division is available on the Internet at www.catalysts.basf.com.

About BASF

BASF Corporation, headquartered in Florham Park, New Jersey, is the North American affiliate of BASF SE, Ludwigshafen, Germany. BASF has approximately 17,000 employees in North America and had sales of $18.7 billion in 2020. For more information about BASF's North American operations, visit www.basf.com/us.

At BASF, we create chemistry for a sustainable future. We combine economic success with environmental protection and social responsibility. More than 110,000 employees in the BASF Group contribute to the success of our customers in nearly all sectors and almost every country in the world. Our portfolio is organized into six segments: Chemicals, Materials, Industrial Solutions, Surface Technologies, Nutrition & Care and Agricultural Solutions. BASF generated sales of €59 billion in 2020. BASF shares are traded on the stock exchange in Frankfurt (BAS) and as American Depositary Receipts (BASFY) in the U.S. Further information at http://www.basf.com.

Seeking Nominations for the 2022 IPMI Premier Industry Awards!

These three (3) Awards will be presented during the 46th Annual Conference in June 2022.

The first award is the **IPMI Jun-ichiro Tanaka Distinguished Achievement Award.** It recognizes career contributions to the advancement of the precious metals industry, be it technological, economic or management. The award includes a $5,000 prize and complementary registration at our International Conference.

The second award is the IPMI Henry J. Albert Award, sponsored by BASF Corporation. It recognizes outstanding theoretical, experimental or engineering contributions to the science and technology of precious metals. The award includes a $5,000 prize and complementary registration at our International Conference.

The third award is the IPMI Carol Tyler Award. It recognizes the achievement of a woman in the precious metals industry, precious metals academia or graduate student in precious metals research. This includes a $5,000.00 prize and complimentary registration at our International Conference.

Please go to the website, **http://ipmi.org/awards/index.cfm** for short videos describing our awards and scholarships as well as for lists of past award recipients.

Send a letter of nomination along with *curriculum vitae*, if appropriate, a list of contributions and achievements and any other supporting documentation in one pdf file by email to: **mail@ipmi.org** Please put **"Premiere Award Nomination"** in the subject line on the email.

Your nominations should be mailed no later than November 30, 2021.

IPMI® Calendar

To register attendance to IPMI events or add to your personal calendar, click on the following: https://www.ipmi.org/events/event_list.asp

2021	Sep 29	New York Chapter Fall Seminar • Perfect Pint • New York, NY
	Sep 30	Platinum Dinner • Intercontinental New York Barclay Hotel • New York, NY
	Oct 6-9	45th Annual Conference • Peppermill Resort • Reno, NV
	Nov 3	New England Chapter Networking Event • Iron Works Tavern • Warwick, RI
2022	Nov 28-30	European Chapter Seminar • Clontarf Castle Hotel • Dublin, Ireland
	Mar 14	IPMI Winter Seminars • Hyatt Regency Grand Cypress • Orlando, FL
	Apr 7	Gold Seminar • New York, NY
	Jun 11-14	46th Annual Conference • Hyatt Regency Grand Cypress • Orlando, FL