



Weekly Precious Metals News Articles: July 2, 2021

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Below is a cross section of relevant news article to the world of Precious Metals:

Markets, Supply & Demand, Investment, and Industrial Applications.

Printable PDF version attached. Enjoy-

Gold

- **Gold dips on firmer dollar as market eye U.S. jobs data**
 - Gold prices edged lower on Thursday, as the dollar hovered near a three-month peak, with investors looking ahead to a key U.S. jobs report due later this week for clues on what it might mean for monetary policy.
<https://www.nasdaq.com/articles/precious-gold-dips-on-firmer-dollar-as-market-eye-u.s.-jobs-data-2021-06-30-0>
- **How tiny gold particles injected into tumours could improve radiation treatment for cancer**
 - The limiting factor in radiotherapy is that doses high enough to try to cure high-risk (locally advanced) non-metastatic tumours also damage surrounding normal tissues. One way to accomplish this is by making tumour cells more sensitive to radiation, so those cells are more easily damaged by radiation therapy. Using gold nanoparticles as radiosensitizers has shown promising results. These gold nanoparticles can be introduced intravenously to accumulate in the tumour by exploiting the faulty walls of the tumour's blood vessels, which tend to be leaky because of fast growth.
 - Gold nanoparticles interact with X-ray photons used in radiation treatment which produces electrons, which then interact with water molecules to produce free radicals. These free-radicals can damage cells, lowering the survival of those cells.
<https://theconversation.com/how-tiny-gold-particles-injected-into-tumours-could-improve-radiation-treatment-for-cancer-156279>

Semiconductor Related Articles (impacting Precious Metals electronics):

- **Intel CEO says chip shortage will hit bottom in late 2021**
 - "I don't expect the chip industry is back to a healthy supply-demand situation until '23," he said in an interview. "For a variety of industries, I think it's still getting worse before it gets better."
<https://www.latimes.com/business/technology/story/2021-06-25/intel-ceo-says-chip-shortage-to-hit-bottom-in-second-half>
- **Time Magazine: From Cars to Toasters, America's Semiconductor Shortage Is Wreaking Havoc on Our Lives. Can We Fix It?**
 - Microchips, long revered as the brains of modern society, have become its biggest headache. The stakes extend beyond pandemic-era shortages. Because chips are a crucial component of so many strategic technologies—from renewable energy and artificial intelligence to robots and cybersecurity—their manufacturing has become a geopolitical

thorn. In the 20th century, oil was the supreme global resource. But this year's shortages have prompted a 21st century catchphrase among policymakers and diplomats: Chips are the new oil.

<https://time.com/6075425/semiconductor-chip-shortage/>

- **Apple starts pulling in component orders for new iPhones**
 - Apple has started pulling in shipments of passive components needed for the production of its next-generation iPhone devices slated for launch in the latter half of 2021, according to sources from Taiwan's handset supply chain.
 - Global smartphone shipments are likely to grow 6.4% to 1.32 billion units in 2021, of which 5G models will expand 70-80% to 500-530 million units.
 - Matt: This most certainly should include thick film ruthenium resistors.
<https://www.digitimes.com/news/a20210628PD205.html>
- **How and When the Chip Shortage Will End, in 4 Charts**
 - At \$39.5 billion, the auto industry makes up less than 9% of chip demand by revenue. That figure is set to increase by about 10% per year to 2025.
 - Chips for the auto sector are made using processes intended to meet safety criteria that are different from those meant for other industries. They are still fabricated on the same production lines as the analog ICs, power management chips, microcontrollers, display drivers, and sensors that go in everything else. "The common denominator is the process technology is 40nm and older, made on supply constrained 200mm wafer technology.
 - One potential hiccup on the road to ending the shortage is that some of the skyrocketing demand appears to be from customers that are double-ordering to bulk up on inventory
<https://spectrum.ieee.org/tech-talk/semiconductors/devices/how-and-when-the-chip-shortage-will-end-in-4-charts>
- **Worldwide IC Market Forecast to Top \$500 Billion in 2021**
 - In a very rare event, 32 of the 33 major IC market categories defined by WSTS are forecast to enjoy an increase in sales this year, with 29 of the product categories expected to see significant double-digit gains. Strong demand across the entire IC market this year is projected to lift sales for the total IC market 24% and break through the \$500 billion plateau for the first time in history (Figure 1). The IC market is forecast to see continued growth next year and again in 2023 when worldwide IC revenues are projected to exceed \$600 billion for the first time.
<https://www.icinsights.com/news/bulletins/Worldwide-IC-Market-Forecast-To-Top-500-Billion-In-2021/>

Silver

- **The Renewable Energy Opportunity in Silver**
<https://www.etftrends.com/gold-silver-investing-channel/renewable-energy-opportunity-set/>
- **Silver Institute June 2021 Newsletter**
 - Silver Demand for Printed and Flexible Electronics Expected to Increase 54% Over Next 10 Years
 - Silver – A Crucial Element in Measuring Athletic Performance
 - Silver Nanoparticles Strengthen Plants and Crops
 - New Finding: Silver Changes Shape and is Consumed When it Attacks Bacteria
 - Gold-Silver Catalysts Lose Silver During Chemical Processes and Scientists Want to Know Why
 - Silver Nanoclusters May Hold Special Power to Stop Cancer Cells from Reproducing
 - Domed Coin Containing "Silver Tears" Honors Incan Legend
<https://www.silverinstitute.org/wp-content/uploads/2021/07/TSI-NL-June-2021-6-30-2.pdf>

Precious Metals Mining:

- **Digital Transformation Crucial for the Future of Mining in South Africa**
 - The application of digital technologies, both in their current form and in future digital forms such as artificial intelligence (AI), machine learning (ML), big data analytics, and the Internet of Things (IoT) is increasingly pivotal to mining success. The players in the space which understand that and use these technologies as enablers are the ones most likely to thrive going forward.
<https://www.itnewsafrika.com/2021/06/digital-transformation-crucial-for-the-future-of-mining-in-south-africa/>
- **Newmont launches climate strategy**
https://elkodaily.com/mining/newmont-launches-climate-strategy/article_732fdd76-431f-557c-8081-02390f916b1e.html

E-Waste & Precious Metals Recycle Related:

- **New process to recycle silicon, silver and glass from end-of-life PV panels**
 - A €4.8 million (AU\$7.5 million) EU-funded research project is aiming to develop a process that allows recovering all components of a photovoltaic module.
<https://www.pv-magazine-australia.com/2021/06/14/new-process-to-recycle-silicon-silver-and-glass-from-end-of-life-pv-panels/>
- **Solar Waste: A Looming Problem**
 - The International Renewable Energy Agency (IRENA)'s official projections claim that "large amounts of annual waste are anticipated by the early 2030s" and could total 78 million metric tons by 2050 based mostly on a 30-year life cycle for the solar panels.
<https://www.irena.org/publications/2016/Jun/End-of-life-management-Solar-Photovoltaic-Panels>
- **BASF expands chemical catalyst recycling capacity and capability**
 - 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.
 - 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.
<https://www.basf.com/global/en/media/news-releases/2021/07/p-21-254.html>
- **Elemental expands position in U.S. metals recycling market**
 - Elemental Holding Group has finalized the acquisition of Maryland Core Inc., one of the leaders in the platinum group metals (PGM) recycling market on the U.S. east coast.
<https://americanrecycler.com/8568759/index.php/news/metal-recycling/4896-elemental-expands-position-in-u-s-metals-recycling-market>
- **Innovative Diesel Catalytic Converter Pt and Pd Recycling Nearly Ready for Prime Time**
 - Mineworx's proprietary processing technology starts with grinding catalytic converter components to a fine powder. The Pd and Pt ores are then extracted using Mineworx's proprietary chemical process and recovered as concentrate. The concentrate is refined, poured into ingots and sold.
 - The equipment will be transported to a new facility run by Davis Recycling, Inc. Founded in 1988, Davis recycles base and precious metals, collecting product from customers in 13 states for processing at its 12-acre facility in Johnson City, Tenn.
 - When the Tennessee plant is fully operational, it will be capable of processing 10 tonnes/day, up to 3,120/tonnes annually. The recycle rates per tonne are expected to reach 1,500 grams of platinum and 170 grams of palladium a day. At scale, the company expects to generate up to \$100 million in annual revenue, at a 20% margin.

<https://www.investorideas.com/news/2021/mining/06293Platinum-Palladium.asp>

- **From toothbrushes to saving the planet: How ultrasonic delamination could hold the key to battery recycling**
 - The use of ultrasonic sound waves has been applied to battery recovery. Researchers from the ReLiB project at the U.K.'s Faraday Institution say the process has already proven to be 100 times faster than conventional approaches. It is also much more sustainable and less energy intensive.
<https://www.pv-magazine.com/2021/06/30/from-toothbrushes-to-saving-the-planet-how-ultrasonic-delamination-could-hold-the-key-to-battery-recycling/>
- **What is bioleaching, and how can it make cars greener?**
 - The value of the global market for metal recycling is expected to grow from \$52 billion in 2020 to \$76 billion by 2025. Without less energy-intensive recycling methods, this emerging industry will only exacerbate environmental problems. But there is a natural process for extracting precious metals from waste that's been used for decades.
<https://www.fastcompany.com/90648678/what-is-bioleaching-and-how-can-it-make-cars-greener>
- **Electronic scrap processors see profits, despite decline in precious metals**
 - While original equipment manufacturers have been using fewer precious metals in electronics, demand has increased for gold, palladium and silver.
 - Matt: I wholeheartedly disagree with this article. PM content in electronics is level on a per revenue basis. Overall PM electronics demand is increasing as electronics markets increase. The key shift in electronics is miniaturization, where passive components, component packages, PCB's and so are increasingly shrinking in size. But millions more devices are being made. In studying the e-waste and electronics recycling trends by metal, there is no indication of a decline. Only
<https://www.recyclingtoday.com/article/electronic-scrap-precious-metals/>

Platinum

Fuel Cells/Hydrogen Economy Related Articles:

- **Mayor of London launches England's first hydrogen double-decker buses**
 - The buses were manufactured by Wrightbus in Northern Ireland, and the gas cylinders are manufactured by Luxfer in Nottingham. The hydrogen for the buses is currently being produced at Air Liquide's plant in Runcorn, harnessing waste hydrogen as a by-product from an industrial chlor-alkali plant. Oxford-based Ryze Hydrogen is responsible for transporting the fuel to the fueling station. From 2023, the hydrogen will be even greener as it will be produced by electrolysis powered by a direct connection to an offshore windfarm.
<https://www.greencarcongress.com/2021/06/20210627-london.html>
- **Alstom rolls out Poland's first fuel cell passenger train**
 - The Coradia iLint is now running on the test track from the Railway Research Institute.
 - The testing will help determine the train's potential for sustainable transportation in Poland.
https://www.hydrogenfuelnews.com/fuel-cell-passenger-train-poland/8547379/?mc_cid=d47f4f710e&mc_eid=70c1246d58
- **Liebherr and GM to develop HYDROTEC fuel cell-based electrical power generation system for aerospace application**
 - Liebherr-Aerospace and GM have recently signed a joint development agreement covering the development of an electrical power generation system to demonstrate how hydrogen fuel cell-based power systems could be used in aircraft application. This demonstrator will be based on GM's HYDROTEC hydrogen fuel cell technology.
<https://www.liebherr.com/en/usa/latest-news/news-press-releases/detail/liebherr-and-gm-to-develop-hydrotec-fuel-cell-based-electrical-power-generation-system-for-aerospace-application.html>
- **Italy could become vital hydrogen hub between North Africa and Europe**

- Italian hydrogen and fuel cells association H2IT is urging the national government to support investment in green hydrogen and ensure medium-long payback periods. The trade body's goal is to build large-scale electrolyzers (>100 MW) to decrease green hydrogen's price below €2.0/kg.
<https://www.pv-magazine.com/2021/06/22/italy-could-become-vital-hydrogen-hub-between-north-africa-and-europe/>
- LOHC (Liquid Organic Hydrogen Carrier) technology: accelerating the deployment of hydrogen storage and fuel cell electric vehicles**
 - The transportation and storage of H₂ is today mainly based on liquid compressed H₂, which has to be stored either at extremely high pressures (350-700 bar) or at extremely low temperatures (-253°C). The need for specialised handling and the insufficient infrastructure and refuelling networks for compressed H₂ represent the main challenges for a more widespread use of H₂ in the transport sector. LOHC technologies provide an effective alternative solution by chemically bonding H₂ to a stable organic liquid carrier, thereby eliminating the need for compression and making it safer, more practical and more cost-efficient to transport H₂ using existing conventional fuel networks.
 - At Umicore, we have launched an incubation and long-term R&D collaboration program focusing on new PGM-based catalyst technologies. The aim is to use LOHCs as a viable alternative to compressed hydrogen in order to accelerate the deployment of green hydrogen and FCEVs.
<https://www.marketscreener.com/quote/stock/UMICORE-38123506/news/LOHC-technology-accelerating-the-deployment-of-hydrogen-storage-and-fuel-cell-electric-vehicles-35659579/>
- 20,000 Celcius plasma to produce low-carbon hydrogen**
 - In the city of Marl, Germany, an ultra-high temperature electrical plasma technology has been used for more than 80 years to crack hydrocarbons to produce chemicals such as acetylene. At present, about 20 Tonnes of hydrogen is produced per day as a co-product. The technology and know-how accumulated over these decades of operation can be applied to produce low-carbon turquoise hydrogen in the future.
<https://www.pollutionsolutions-online.com/news/green-energy/42/sbh4-gmbh/20000-celcius-plasma-to-produce-low-carbon-hydrogen/55617>

Palladium

- Palladium Price Analysis: XPD/USD consolidates recent gains below \$2,700 on firmer USD**
<https://www.fxstreet.com/news/palladium-price-analysis-xpd-usd-consolidates-recent-gains-below-2-700-on-firmer-usd-202106290511>
- General Motors quarterly sales get boost from strong SUV demand**
 - U.S. automaker General Motors Co (GM.N) on Thursday posted a 40% jump in second-quarter U.S. sales on strong demand for its sport utility vehicles (SUVs), and said the trend will continue into 2022.
<https://www.reuters.com/business/autos-transportation/general-motors-reports-40-rise-second-quarter-us-auto-sales-2021-07-01/>
- Global chip shortage hits car production in China and Japan**
 - Semiconductor problem hits wider industry, with growth in China at four-month low and 6% drop in Japan
<https://www.theguardian.com/world/2021/jun/30/global-semiconductor-shortage-affecting-car-production-in-china-and-japan>

PGM Minor Metals (Rhodium, Iridium, Ruthenium, Osmium)

- Pt, Au & Iridium: Researchers developed a promising antiferromagnetic MRAM device structure**

- Researchers from Northwestern University and the University of Messina in Italy developed a new MRAM memory device composed of antiferromagnetic materials, which could be beneficial for use in AI systems and cryptocurrency mining.
- The researchers now improved on the initial design in multiple ways, using a manufacturing-friendly antiferromagnetic material system called iridium manganese (IrMn₃). The researchers demonstrated electrical switching of antiferromagnetic IrMn₃ using differential voltage measurements.
<https://www.mram-info.com/researchers-developed-promising-antiferromagnetic-mram-device-structure>
- **Ir/Pt Catalyst: The Hydrogen Stream: An electrolyzer factory in France, a 100 MW electrolyzer in Portugal**
 - A new study by the European Hydrogen Backbone initiative estimates 2,300 TWh of hydrogen demand in the EU and U.K. by 2050, corresponding to 20-25% of future EU and U.K. energy demand. “This equals about 45% of EU and U.K. natural gas consumption in 2019,” read a note released by Gas for Climate on Tuesday.
<https://www.pv-magazine.com/2021/06/15/the-hydrogen-stream-an-electrolyzer-factory-in-france-a-100-mw-electrolyzer-in-portugal/>

Clean Energy General News (New Section)

- **The Hydrogen Stream: 45 GW project in Kazakhstan, new push from Norway**
 - “Svevind plans to install wind and solar farms with a total capacity of 45 GW in mainly steppe areas in western and central Kazakhstan,” the two companies said in a joint statement. “The green electricity will feed 30 GW of electrolyzers to produce about three million tons of green hydrogen every year.”
<https://www.pv-magazine.com/2021/06/29/the-hydrogen-stream-45-gw-project-in-kazakhstan-new-push-from-norway/>

BEV / LiB Battery Market News

- **Global Mining Symposium: Demand for nickel in EV batteries could lead to supply shortage in the next couple of years, says McKinsey’s Ken Hoffman**
 - The growing market for electric vehicles is likely to see increased pressure for nickel, a critical component for the nickel-manganese-cobalt (NMC) batteries used in EVs, Ken Hoffman, senior expert at McKinsey’s Basic Materials Institute.
<https://www.northernminer.com/subscribe-login/?id=1003831172>
- **Tesla shows off the AI supercomputer training what it hopes will one day be self-driving car**
 - If you’re wondering what it takes to develop a self-driving car, know that Tesla is using a 1.8-exaFLOP AI supercomputer packed with 5,760 GPUs that train neural networks it hopes one day will power autonomous vehicles.
 - It has 780 compute nodes, each containing up to eight Nvidia A100 80GB GPUs. The super also has 10PB of NVMe storage. Tesla’s AI models churn through millions of ten-second clips of driving footage recorded at 36 frames per second during training. “Computer vision is the bread and butter of what we do and enables Autopilot. For that to work, you need to train a massive neural network and experiment a lot,” Karpathy added. “That’s why we’ve invested a lot into the compute.”
 - Matt: 10PB (MB’s x1000 = GB x1000 = TerraBytes x 1000 = PetaBytes is huge amount of) Non-Volatile Memory
https://www.theregister.com/2021/06/27/in_brief_ai/
- **Nickel Sulphate, Sustainability: The carbon cost of Tsingshan’s NPI to nickel matte refining route**
 - In March 2021, Tsingshan announced its intention to supply 75.0ktpy of nickel in nickel matte from its Morowali Industrial Park in Indonesia, made available for the nickel sulphate sector. This route, expected to come online in October 2021, requires laterite ore to be smelted to a nickel pig iron (NPI)

product, before being converted to a nickel matte, an intermediate product suitable for nickel sulphate production.

- Matt: Expert Lyle Trenton of Trenton Consulting previously estimated incremental +60t CO2 equivalent in emissions using this extra smelting path with their current coal-based grid.
- Matt: Give Class 1 batter grade nickel is only 40% of the global nickel mined supply, and the rate of projected EV penetration will take transportation Nickel demands ultimately higher than mined supply in the 2030-35 timeframe, this issue of refining NPI (Nickel Pig Iron) needs to be resolved to scale EV's.
<https://roskill.com/news/nickel-sulphate-sustainability-the-carbon-cost-of-tsingshans-npi-to-nickel-matte-refining-route/>
- **Ranked: Top 25 Nations Producing Battery Metals for the EV Supply Chain**
 - Here are the top 25 countries for lithium-ion battery supply chain in 2020 and 2025f based on BloombergBEP's rankings.
<https://elements.visualcapitalist.com/ranked-top-25-nations-for-battery-metals/>
- **Glencore to reopen one of world's biggest cobalt mines**
 - Glencore Plc could reopen its Mutanda Mining copper and cobalt project in Democratic Republic of Congo by the end of 2021, about two years after idling the mine.
 - Mutanda "will start the commissioning of operations towards the end of this year in order to allow the return to production in 2022," Glencore said in a separate emailed statement.
 - Mutanda was responsible for a fifth of global cobalt production in 2018 producing 27tpa Cobalt and 199tpa Copper.
<https://www.mining.com/web/glencore-to-reopen-one-of-worlds-biggest-cobalt-mines/>
- **Sumitomo Metal sees global nickel demand for battery use to rise 18% in 2021**
 - Demand of nickel used in rechargeable batteries will increase to 228,000 tonnes in 2021 from 193,000 tonnes in 2020.
<https://www.reuters.com/business/autos-transportation/sumitomo-metal-sees-global-nickel-demand-battery-use-rise-18-2021-2021-06-29/>
- **India to host new 1 GWh lithium-ion battery factory**
<https://www.pv-magazine.com/2021/06/30/india-to-host-new-1-gwh-lithium-ion-battery-factory/>
- **New cathode design promises battery sustainability**
 - Scientists in the U.S. developed a new cathode design for lithium-ion batteries that they say could open up a range of different materials for further research. The group has high hopes that the discovery can quickly be brought to scale, easing some of the growing concerns around supply chains for battery materials.
<https://www.pv-magazine.com/2021/06/30/new-cathode-design-promises-battery-sustainability/>

Regards –