



Weekly Precious Metals News Articles: April 5, 2024

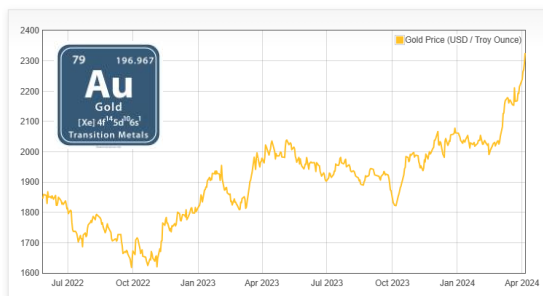
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Below is a cross section of relevant news article to the world of Precious & Critical Metals: This markets, supply & demand shifts, investment, mining, recycle and industrial applications.

A printable PDF version with more embedded graphics is attached. Enjoy-

Gold

Gold Prices for the Last 2 Years



Gold – Friday pm ↑↑ 2,326/toz

Silver Prices for the Last 2 Years



Silver – Friday pm ↑ \$27.45/toz

- [Gold plows to record high after Powell's remarks](#)
 - Fed continues to believe policy rate likely at peak for this cycle -Powell
 - Gold prices up over 11% so far this year
 - Silver hits more than two-year high
- [Gold held by central banks has now accumulated a value of over \\$2.6 trillion](#)
 - The holdings of the precious metal have surged after fourteen years of purchases by monetary authorities. Central banks are buying gold in large quantities. The latest data from the World Gold Council (WGC) reflects that monetary authorities have recorded 14 consecutive years of net acquisitions of this precious metal, bringing their holdings to over 36,700 metric tons valued at \$2.52 trillion.
- [Gold hits record highs on safe-haven demand, US rate cut bets](#)
 - Spot gold gained 1.2% to \$2,220.85 per ounce
- [Gold prices are hitting record highs; what's driving the surge?](#)
 - Expected interest rate cuts have contributed to the March rally
 - Central banks have been buying gold at a record pace in recent years
 - Even Costco has started selling gold
- [Gold hits new record high on Fed rate cut bets](#)

- Gold hit another fresh record high Monday as investors grow confident that the Federal Reserve will cut interest rates this year, even after data showed a slight uptick in a key inflation report.
- The precious metal has enjoyed healthy buying interest this year as the US central bank hints at an easing of credit conditions. On Monday it hit a new high of \$2,256.44, according to Bloomberg News.
- [Large area single crystal gold of single nanometer thickness for nanophotonics](#)
 - The nanometer-scale thickness and single crystal quality makes 2DGFs a promising platform for realizing plasmonic nanostructures with nanoscale optical confinement. This is demonstrated by patterning 2DGFs into nanoribbon arrays, exhibiting strongly confined near infrared plasmonic resonances with high quality factors. The developed 2DGFs provide an emerging platform for nanophotonic research and open up opportunities for applications in ultrathin plasmonic, optoelectronic and quantum devices.

Semiconductor Related Articles (impacting Precious Metals electronics):

- [China criticises US tightening of chip export rules](#)
 - China has criticised the tightening of U.S. rules on semiconductor exports, saying they have created more hurdles to trade and more uncertainty in the chip industry.
 - The Biden administration last week revised rules aimed at making it harder for China to access U.S. artificial intelligence chips and chipmaking tools, part of a larger effort to hobble Beijing's chipmaking industry over national security concerns.
- [South Korea's Semiconductor Output \(mostly 3D NAND Memory\) Rises by Most in 14 Years](#)
 - Production jumped +65.3% from a year earlier, the biggest rise since late 2009, according to data released Friday by the national statistics agency. Shipments of semiconductors also rose +59%, even though it was weaker than +62.7% in January. Inventory shrank -16.2%, falling for a second month in another sign of strong demand.
- [Intel shares fall after company reveals \\$7 billion operating loss in foundry business](#)
 - Intel said its foundry business recorded an operating loss of \$7 billion in 2023 on sales of \$18.9 billion. That's a wider loss than the \$5.2 billion Intel reported in its foundry business in 2022 on \$27.5 billion in sales. Intel said the newly organized Products division, which mainly consists of processors for PCs and servers, reported \$11.3 billion in operating income on \$47.7 billion in sales in 2023.
- [Global Semiconductor Sales Increase 16.3% Year-to-Year in February](#)
 - SIA today announced global semiconductor industry sales totaled \$46.2 billion during the month of February 2024, an increase of +16.3% compared to the February 2023 total of \$39.7 billion but a decrease of -3.1% from the January 2024 total of \$47.6 billion.
- [Chip companies report limited damage from earthquake](#)
 - TSMC said that its employees returned to work after being evacuated temporarily from some factories and it was conducting inspections

Silver

- [Expert Says Silver Breakout is Imminent](#)
 - While silver usually follows gold, it can sometimes outperform gold in a bull market. Struthers believes we may be in one of those instances.
- [Solar demand to continue to push silver price higher, this is when markets could see \\$100 silver - Hecla Mining CEO Phillips Baker](#)
 - On Wednesday, Watson recorded an episode of Green Rush with guest Phillips Baker. Baker is president & CEO of Hecla Mining, the largest silver producer in the United States, and chairman of The Silver Institute.
- [Nord Precious Metals Mining to Develop Process for Silver Paste Production for Solar Cells and High-Tech Applications](#)

- "We firmly believe that our Cobalt facility and Coleman location are well-suited for the production of this value-added product," added Matthew Halliday. "With the support of government initiatives and strategic partnerships, we are confident in our ability to help drive economic growth and establish Canada as a global hub for critical metals and advanced manufacturing."
- **Gold SWOT: The silver market has been in a deficit position for the last two years**
 - The Silver Institute notes that the physical silver market has been in a deficit position for the last two years with another deficit forecast for 2024. Silver had been lagging gold earlier this year but in the last month, silver has gained 9.44% while gold is up 8.55%. Silver is likely to be well supported with expanding solar cell production.
- **Layer-stacked polyaniline/silver nanowire composite film for multicolor electrochromic smart windows with dual-band optical modulation**
 - DESWs fabricated by layer-stacked polyaniline/silver nanowire composite film.
 - DESWs exhibit excellent electrochromic properties (short switch time, high coloring efficiency, and better cycle stability).
 - DESWs based on PANI/Ag NWs film outperformed the pure single-layer PANI film.
 - The diffusion coefficient of Li+ in PANI/Ag NWs film is far higher than that in pure PANI.
- **China solar industry faces shakeout, but rock-bottom prices to persist**
 - China has driven global oversupply of solar production capacity
 - Prices of Chinese solar panels fell 42% in 2023 -Wood Mackenzie
 - China's 2023 production capacity was double global installations
 - Consolidation in China's crowded solar power sector is pushing smaller players out of the market, but excess production capacity, with more on the way, threatens to keep global prices low for years.
 - China accounts for 80% of solar module production capacity after years of subsidies, driving oversupply that has triggered a collapse in global prices and provoked import duties from trading partners to stave off being swamped by low-cost equipment.
- **It may be silver's turn to shine after the gold rush to record high prices**
 - \$35 to \$50 silver prices may become a 'real possibility' this year: analyst

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Precious Metals Mining:

- **Nornickel says financial stability is priority, not dividends**
 - Nornickel's 2023 net profit and revenue declined due to low metal prices.

- A tax increase in Russia, geopolitical risks and western sanctions on Russia in response to the conflict in Ukraine had constrained company's development, though the sanctions have not targeted the Nor Nickel directly, said Vladimir Zhukov, vice president for investor relations.
- [**Nornickel Faces Rejection in EU Amid Russian Metals Boycott**](#)
 - European clients refuse Russian metal products despite absence of sanctions.
 - Nornickel shifts sales focus to Asia amidst mounting challenges in Europe.
 - Company explores new applications for palladium amid market uncertainties.
- [**Underperforming precious metals and copper stocks poised to correct**](#)
 - Demand is being driven by strong central bank buying, with developing nations in particular stocking up on bullion as insurance against having their foreign currency reserves frozen like happened to Russia after it invaded Ukraine; and geopolitical instability, with wars in Ukraine and Gaza still raging and there's China's positioning on Taiwan causing stress.
- [**Gold Fields begins gold production at new Chilean mine**](#)
 - The South African miner, which took 13 years to develop the project from exploration to production, said it poured its first gold-silver doré at Salares Norte on March 28.
 - The mine, which cost Gold Fields over \$1 billion to build, is key to its goal of producing 2.8 million ounces of gold by 2025, it said. Production at Salares Norte is expected to reach about 250,000 ounces of gold this year, ramping up to full-year production of 580,000 Toz next year.
- [**PGM cash burn to top \\$400m without more restructuring**](#)
 - According to a report by RMB Morgan Stanley, published on March 13, mines owned by Sibanye-Stillwater, Impala Platinum (Implats) and Northam Platinum's Eland mine could burn about \$430m in cash, after stay-in-business expenses, by calendar year-end – a staggering sum.
- [**Time to let out the handbrake on platinum group metals?**](#)
 - The JSE's four largest platinum miners cut nearly R30bn in planned capital and stay-in-business expenditure in February in a clear vote that the metal's price, and those of its palladium and rhodium co-products, will be lower for longer. Far longer, in fact.
 - Northam Platinum CEO Paul Dunne said at his firm's interim results presentation on March 1 that it could take two years before bad market sentiment in platinum group metals (PGMs) shakes out. That's sobering news for a sector that paid record dividends only two years earlier.

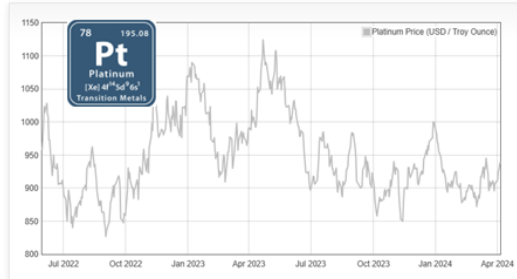
E-Waste & Precious Metals Recycle Related:

- [**Biden-Harris Administration Announces \\$62M to Lower Battery Recycling Costs Across the Nation**](#)
 - As part of President Biden's Investing in America agenda, the U.S. Department of Energy (DOE) today announced \$62 million for 17 projects funded by the Bipartisan Infrastructure Law to increase consumer participation in consumer electronics battery recycling and improve the economics of battery recycling.
- [**Scientists develop greener method for extracting gold from low-grade ore, e-waste**](#)
 - In a paper published in Nature Chemical Engineering, scientists note that gold used in electronics accounts for 8% of the metal's overall demand, and 90% of the gold used in electronics ends up in US landfills yearly.
 - To address this issue, the researchers came up with the first precious metal extraction and separation process fully powered by the inherent energy of electrochemical liquid-liquid extraction, or e-LLE. The method uses a reduction-oxidation reaction to selectively extract gold and platinum group metal ions from a liquid containing dissolved electronic waste.
- [**Solar panel waste crisis predicted to hit sooner than expected**](#)
 - How the solar industry is approaching a solar panel waste crisis and what are the proposed solutions for sustainable recycling and responsible management
- [**Solar panel waste to reach crisis levels in next two to three years, Australian experts warn**](#)

- Led by Rong Deng, a renewable energy engineering researcher at the University of NSW, the paper predicted that if the production of solar panels expands by five to 10 times, as is hoped, “we will run out of the world’s reserves of silver in just two decades”. “If it’s happening right now, [we] need to do something,” Deng said.
- The immense scale of waste comes down to two factors. Victoria is the only state to have banned the disposal of solar panels in landfill, and the cost to recycle solar panels – \$10 or \$20 per panel – disincentivizes recycling. Additionally, panels that are recycled, the technologies needed to extract valuable materials is not available.

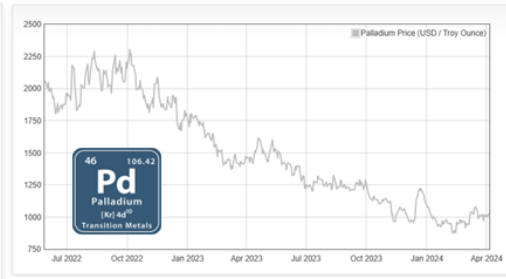
Platinum

Platinum Prices for the Last 2 Years



Platinum - Friday pm ↑ \$936/toz

Palladium Prices for the Last 2 Years



Palladium - Friday pm ↓ \$1,022/toz

- [Modification of nickel wire electrodes with platinum in the presence of copper ions via galvanic replacement reactions](#)
 - Pt nanoparticles could be deposited on Ni wire with the help of Cu²⁺.
 - Promoted deposition of Pt was confirmed by observing the electrocatalytic oxidation of alcohols.
 - Pt deposits were found to do not include Cu.
 - A simple method for the modification of Pt on Ni could be proposed.
- [Johnson Matthey Technology Review](#)
 - Dozens of technical articles
- [EPA Sets 'Strongest-Ever' Emissions Standards for Trucks](#)
 - See the table below for model year emission reduction standards.

Percent Reduction from the Phase 2 CO ₂ Emission Standards						
Model Year:	2027	2028	2029	2030	2031	2032
Light-Heavy Vocational	17%	22%	27%	32%	46%	60%
Medium-Heavy Vocational	13%	16%	19%	22%	31%	40%
Heavy-Heavy Vocational	--	--	13%	15%	23%	30%
Day Cab Tractors	--	8%	12%	16%	28%	40%
Sleeper Cab Tractor	--	--	--	6%	12%	25%

- [Platinum price presses on the moving average – Forecast today – 2-4-2024](#)
 - Platinum price started to form new positive waves to notice providing new pressures on the EMA55 at \$913 in order to find a way to resume the main bullish attack in the upcoming period.
 - The suggested positivity depends on the frequent stability above \$892 support line, in addition to stochastic attempt to provide the positive momentum, thus, we will keep our bullish overview that might target \$932 initially, followed by reaching the first main target at \$950.
- [Bosch Expands Its Exhaust-Gas Temperature Sensor Range](#)
 - The expansion includes an additional 107 part numbers, broadening Bosch's offerings to encompass a diverse array of engines, including diesel, gasoline, and hybrid models.

Fuel Cells/H₂ Economy Related Articles:

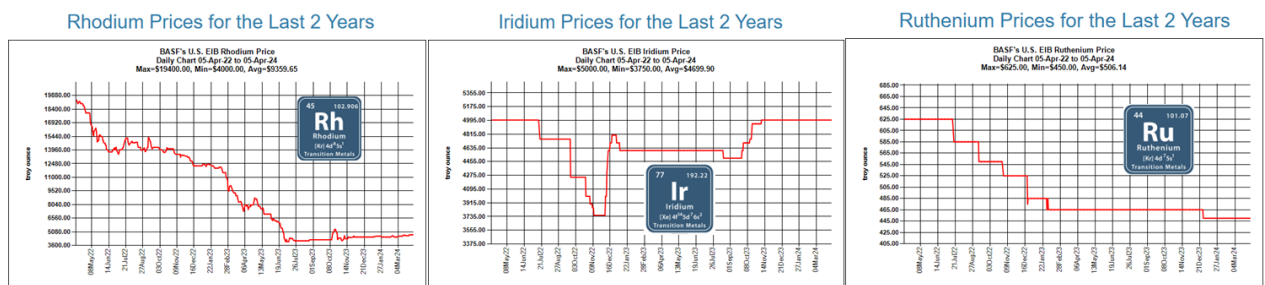
- [Green energy capital of the world - another hydrogen plant moves ahead on Teesside](#)
 - Phase 1 of the project involves the design and build of a 355MW hydrogen production facility and hydrogen distribution system, with the potential to upscale to more than 1GW in a second phase by 2030, contributing up to 10% of the UK's target hydrogen capacity. Kellas says it is partnering with Worley and Johnson Matthey, two leading service companies, for H2NorthEast FEED.
 - Johnson Matthey, has been appointed through Worley as FEED technology partner, deploying its leading LCH™ tech that will provide the highest process efficiency commercially available today for low carbon hydrogen production, and with >95% carbon capture, is higher than the levels set in the UK Low Carbon H₂ Standard, the most stringent in the world.
- [Ballard announces \\$54 million of additional funding support, bringing total U.S. federal funding to \\$94 million for Ballard's fuel cell Gigafactory in Texas](#)
 - Ballard announced it has been awarded \$54 million of investment tax credits from the U.S. Internal Revenue Service as part of the Qualifying Advanced Energy Project Tax Credit (48C), funded by the Inflation Reduction Act (IRA). The 48C program, which provides 30% investment tax credits for selected clean energy manufacturing projects, is designed to support secure and resilient domestic clean energy supply chains. Ballard plans to use the \$54 million in tax credits to support the build-out of a new fuel cell Gigafactory in Rockwall, Texas.
- [Engineers 'symphonize' cleaner ammonia production](#)
 - The process, called lithium-mediated ammonia synthesis, combines nitrogen gas and a hydrogen-donating fluid such as ethanol with a charged lithium electrode. Instead of cracking apart nitrogen gas molecules with high temperature and pressure, nitrogen atoms stick to the lithium, then combine with hydrogen to make the ammonia molecule.
 - The reaction works at low temperatures, and it's also regenerative, restoring the original materials with each cycle of ammonia production.
- [New platinum-based hydrogen fuel cell as cheap to make as conventional car engine](#)
 - The hydrogen fuel cell developer and manufacturer has also confirmed that its innovative IE-DRIVE™ is a proton exchange membrane (PEM) fuel cell. PEM and platinum go hand-in-glove.
 - The single stack platform burst into the open during a launch event at Intelligent Energy's Loughborough headquarters, where it powered a sports utility vehicle (SUV) provided by Changan UK.
- [Itochu to explore Amogy's tech for ammonia-powered vessels](#)
 - The Brooklyn, New York-based company said on Tuesday it has signed a MoU with Itochu, under which the companies will study opportunities for deploying Amogy's system on vessels owned, operated or chartered by the Japanese trader. The partnership may extend to other areas of the NH₃ and H₂ value chain, like ammonia bunkering projects, advisory services or partnerships in NH₃ supply.
- [An air- and moisture-stable ruthenium precatalyst for diverse reactivity](#)
 - Here we present a highly reactive air- and moisture-stable ruthenium precatalyst [(tBuCN)5Ru(H₂O)](BF₄)₂, featuring a key exchangeable water ligand. This versatile precatalyst drives an array of transformations, including late-stage C(sp²)-H arylation, primary/secondary alkylation, methylation, hydrogen/deuterium exchange, C(sp³)-H oxidation, alkene isomerization and oxidative cleavage, consistently outperforming conventionally used ruthenium (pre)catalysts.
- [Renewable H₂, NH₃ and green steel producers to be granted free EU carbon credits next year](#)
 - Producers of renewable hydrogen, green H₂-derived iron and steel and green ammonia will shortly be eligible for free allowances under the EU's carbon trading mechanism, after updated rules were today (Thursday) published in the EU's official journal.
- [Cost of hydrogen mobility is 'sky high', says Stellantis CEO, two months after introducing eight new H2 van models](#)

- “Right now, we see that the technology for hydrogen-based mobility is twice as expensive as the electric vehicles, which then means that we are very far from conventional [fossil-fuel] technology, so I’m afraid that for the time being affordability is going to be a major showstopper for hydrogen.”
- Twice as expensive may be something of an underestimate, depending on the market, with Hydrogen Insight writing in September last year that it was almost 14 times more expensive to drive a Toyota fuel-cell car than a comparable Tesla EV.

Palladium

- [Economic slump nudges down platinum and palladium forecasts - Reuters poll](#)
 - The poll of 27 analysts and traders forecast little change for prices over the next year.
 - It returned median forecasts for platinum to average \$907 an ounce in the last three months of this year, \$932.50 in the first quarter of 2023 and \$970 for the full 2023 year.
 - For palladium, it predicted average prices of \$2,069 an ounce in the fourth quarter, \$2,075 in the first quarter of next year and \$2,037.50 an ounce for 2023 as a whole.
- [US Vehicle Sales in Q1 Display Continued Demand Momentum](#)
 - U.S. new vehicle sales is expected to have risen +5.6% year over year to 3.8 million units volume in the first quarter of 2024, per Cox Automotive. March’s seasonally adjusted annual rate is anticipated to reach 15.5 million units, suggesting a +0.6 million increase from last year’s reported figure.
 - Most global auto giants have reported impressive U.S. sales results in the first quarter of 2024. Sales of Toyota TM, Honda HMC, Volkswagen VWAGY and Nissan NSANY have seen significant YoY improvements. However, industry leader General Motors GM has recorded a slight decline in the sales volume.
- [Hybrid cars are back in as electric vehicle sales slow](#)
 - Automakers are increasingly hedging their bets on EVs with hybrids
- [Palladium Multiplies Gains](#)
 - Palladium increased above \$1000 per ounce, reaching its highest level in 2 weeks, driven by optimism around future demand, as the latest inflation data from the US pointed to cooling price pressures and added some leeway for Fed to start its easing cycle sooner rather than later.
 - Meanwhile, the pick-up in manufacturing activity in top consumer China also improved the metal’s prospects. Official survey, which pointed to the first expansion in the sector in six months.

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



EIB US Friday: Rhodium → \$4,750/toz

Iridium EIB Friday → \$5,000/toz

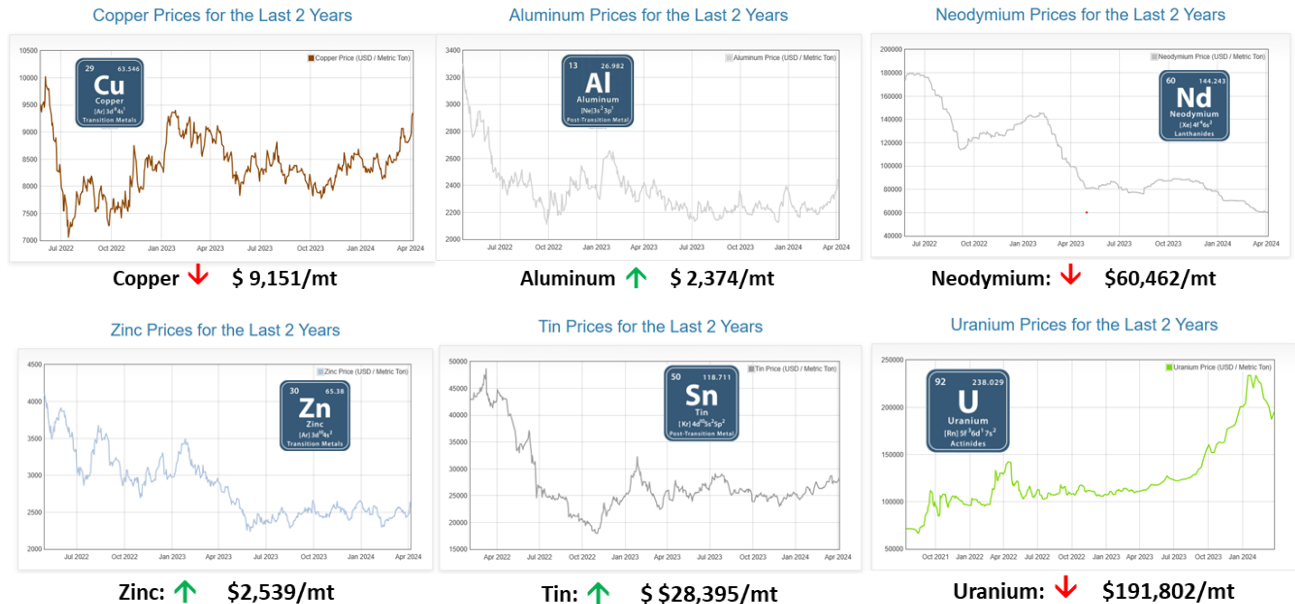
EIB US Friday Ask: Ruthenium → \$450/toz

- [Mixed metal oxides in catalytic ammonia cracking process for green hydrogen production: A review](#)
 - Hydrogen (H₂) and ammonia (NH₃) are two competitive net zero energy sources and energy carriers.
 - The dissociated N₂ and H₂ species undergo surface reactions such as migration and recombination.
 - MMOs offer several advantages for NH₃ decomposition with high activity, selectivity, and stability.
 - The specific combination/composition of MMOs can vary depending on the desired catalytic properties.

- Some MMOs can initiate NH_3 decomposition without the need for external energy sources.
- **Ru, Ag/Au, ITO: [Volkswagen's ID Buzz Will Release Premium Pricing In The US In 2024](#)**
 - Volkswagen's ID Buzz, an electric van modelled after the iconic VW Bus, is expected to hit the US market in 2024, with a starting price higher than the average for EVs.
 - With its distinctive seven-seater design and premium features, like an **electrochromic glass roof**, the ID Buzz aims to revitalise the flagging US EV market.
 - However, obstacles like the lack of charging infrastructure and the vehicle's premium pricing may hinder its mass-market appeal, even though potential tax credits could lower consumer costs.
- **[Janus electronic state of supported iridium nanoclusters for sustainable alkaline water electrolysis](#)**
 - Here we profile an Ir/NiPS₃ support structure to study the Ir electronic states and performances in HSo/OER-integrated alkaline water electrolysis. The supported Ir is evidenced with Janus electron-rich and electron-poor states at the tip and interface regions to respectively facilitate the HSo and OER processes.
- **Rhodium: [The optoelectronic, elastic and magnetic properties of Iron and Rhodium doped NbTu₂S₄ Sulvanite semiconductors: promising candidates for next-generation energy harvesting devices](#)**
 - The family of ternary Chalcogenides systems has been investigated for their potential applications in optoelectronic devices.
- **Iridium: [Storing electrons from hydrogen for clean che | EurekAlert!](#)**
 - "We have been actively exploring hydrogen energy carriers that can be easily synthesized and used as-is. These compounds are based on the hydrogenase enzyme found in nature, which can catalyze hydrogen into protons and electrons at room temperature," explains Ogo. "A core idea of our approach that led to a breakthrough was to view hydrogen not as a source of negatively charged hydride ion or hydrogen atom, but as electrons."
- **[New electrochemical PGMs demand on way, iridium scarcity fears eased still further](#)**
 - Mattiq is developing electrochemical processes that run on clean electricity to decarbonise chemicals production.
 - "For the same reasons that iridium is quite durable over long periods of time in PEM electrolyser applications, other PGMs such as platinum, palladium, rhodium, exhibit similar characteristics where they're active and efficient catalysts, and they're very durable over long periods of time. Fortunately, all those materials are less expensive and not as scarce as iridium," said Ashley.
 - **[Pajarito Powder Selected for \\$20 Million in DOE Awards to Build Out Fuel Cell and Green Hydrogen \(Iridium\) Catalyst Supply Chains](#)**
 - Pajarito Powder, LLC, a domestic developer and manufacturer of advanced (iridium) catalysts, an enabling technology used in fuel cells and electrolyzers, was selected for two \$10 million awards by the U.S. DoE. The funds will increase production & reduce costs of catalysts for lower-cost fuel cells and green H₂ production.
 - [Pajarito Powder LLC website](#): Pajarito Powder's advanced engineered PEM catalysts reduce the amount of iridium used in green hydrogen production by 14 percent to 60 percent, making the supply of the precious metal extend further. It also greatly reduces the cost of green hydrogen production.
 - "We are proud to be involved with this project and look forward to working even closer with Pajarito Powder on the effort of iridium sustainability," said **Auris Noble** chief operations officer Patrick Deeringer.
- **[Subnanometric Osmium Clusters Confined on Palladium Metallenes for Enhanced Hydrogen Evolution and Oxygen Reduction Catalysis](#)**
 - Here, we leverage a facile heterostructure design strategy to construct atomically thin Os@Pd metallenes, with atomic-scale Os nanoclusters of varying geometries confined on the surface layer of the Pd lattice, which exhibit excellent bifunctional properties for catalyzing both hydrogen evolution (HER) and oxygen reduction reactions (ORR).
- **[Ruthenium-cobalt bimetallic nanoparticles supported on oxidized carbon nanotubes as HER catalyst under alkaline conditions](#)**

- The ruthenium-cobalt bimetallic nanoalloy loaded on oxidized carbon nanotubes (RuxCoy@OCNTs) were prepared as catalysts. The catalyst exhibited outstanding catalytic performance and excellent stability under alkaline conditions (pH = 14) for HER. Cobalt doping can improve the electronic state of catalysts, which can improve the performance of ruthenium catalysts under alkaline conditions.

Clean Energy Market News



- Clean energy transition risks ‘U-turns and detours’ in all regions**
 - The International Energy Agency (IEA) has warned that annual global investment in grids has “remained broadly stagnant” since the Paris Agreement was ratified in 2015, at around \$300bn per year, but needs to reach \$600bn by 2030. This level of funding would enable the addition or replacement of 80 million kilometers of power lines by 2040. This is equivalent to the entire existing electricity grid at present.
- Japan’s Top Utility Pilots Ammonia Use to Reduce Coal Emissions**
 - Jera started the first of its kind demonstration at its Hekinan Thermal Power Station in the Aichi prefecture on Monday, along with manufacturer IHI Corp. The utility aims to replace 20% of coal heating value with fuel ammonia (NH₃) in its large-scale, commercial power plant.
 - The experiment’s outcome will dictate whether Japan can scale up its plans to use NH₃ in coal power plants as a way to help meet its net zero target. The resource-scarce nation relies on a vast range of technologies to decarbonize its economy, but the use of NH₃ and H₂ in coal or gas-powered plants has been criticized by some countries and environmental groups as expensive and not effective in reducing emissions.
- Mounting Losses Mean Sweden’s Wind Industry Faces Total Financial Collapse**
 - Notwithstanding €billions in subsidies, Sweden’s embattled wind industry is on the brink of total financial collapse. The majority of Swedish wind power outfits are underwater, bleeding cash and have no hope of recovery. In the piece below, Carl Deconinck reports on the work of two economists, Christian Sandström and Christian Steinbeck, who conclude that the industry’s collapse is not only inevitable, but imminent.
- US talks often with Congo’s Gecamines on cobalt and copper, official says**
 - The United States speaks regularly with the Democratic Republic of Congo’s state miner Gecamines, a senior State Department official told Reuters, as Washington seeks to deepen relationships with key suppliers of cobalt and copper across the African continent.
- How Many Transformers Will US Distribution Grid Need by 2050?**

- NREL initial results indicate that transformer demand could increase 160%–260% by 2050 compared to 2021 levels. This increase in demand is primarily due to aging infrastructure and electrification, but factors such as extreme weather



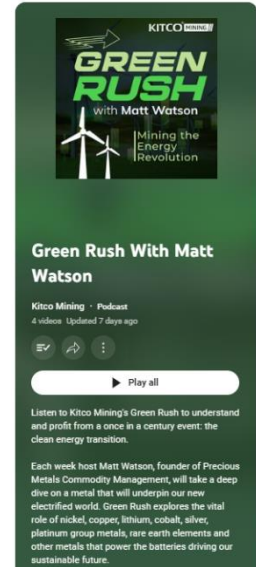
- damage and utility resilience programs can further compound demand. The NREL analysis is providing the first-ever comprehensive forecasting of distribution transformers, informing vital distribution planning decisions & supporting collaborative efforts across the public & private energy sectors.
- NREL also identified increasing demand for step-up transformers, which are used to convert low-voltage electrical generation into high-voltage electricity for long-distance transmission. This type of transformer is needed to integrate wind and solar farms onto the power grid by adjusting voltages, improving efficiency, and enhancing grid reliability.
- **[Thermal coal will make investors money for years to come](#)**
 - The dirty commodity might be unpopular with some, but thermal coal is proving to be good business. Demand for the fuel was stoked to a record high of more than 8.5 billion tons last year, according to the International Energy Agency. It expects coal demand to remain robust until 2026, followed by a slow decline, partly driven by energy policy and subdued growth in China.
- **[Graphite's war-fighting capabilities](#)**
 - The danger of running out of minerals needed to build weapons and defend territories is a heightened risk now, during a period of intensified global conflict. With wars raging on two fronts — Eastern Europe and the Middle East — not to mention numerous smaller wars like the conflicts in Yemen and the DRC, nations are girding for war and re-arming their militaries, pushing up demand for critical and non-critical minerals including graphite, aluminum, steel, iron, rare earths, nickel and titanium.
- **[Biden-Harris Administration Announces \\$4 Billion in Tax Credits to Build Clean Energy Supply Chain, Drive Investments, and Lower Costs in Energy Communities](#)**
 - Clean energy manufacturing and recycling: \$2.7 billion in tax credits (67% of round 1 tax credits). Used for clean hydrogen, grid, EVs, nuclear power, solar PV, and wind energy
 - Critical materials recycling, processing, and refining: \$800 million in tax credits (20% of round 1 tax credits)
 - Industrial decarbonization: \$500 million in tax credits (13% of round 1 tax credits)
- **[Palisades \(Michigan\) Nuclear Plant on Path to Recommissioning by 2025](#)**
 - The U.S. Department of Energy's (DOE's) Loan Programs Office (LPO) announced a conditional commitment of up to \$1.52 billion for a loan guarantee to Holtec Palisades LLC to finance the restoration and resumption of service of the Palisades Power Plant, an 800-MW nuclear generating station in Covert Township, Michigan
- **[REE's: Water-soluble rare earth elements \(REEs\) recovered from uranium tailings - ScienceDirect](#)**
 - Water leach able to extract rare earth elements (REEs) from tailings.
 - More than 10,000 t of REEs could be recovered using an in-situ water leach.
 - REEs recovery using water leach potential exceeds the uranium recovery during initial mining.
 - Water leaching and recovery of REEs from tailings allows for economic rehabilitation.
 - In situ extraction from tailings allows for low water, low energy recovery.



- **LME nickel price slightly increases in Q1**
 - In the Q1, the London Metal Exchange (LME) nickel price totally increased by US\$146/ton, slightly growing by 0.88%. Meanwhile, the total increase in nickel inventory at LME was 13,092 tons, soaring by 20%.
- **Indonesia to accelerate nickel output despite low global prices**
 - Deputy minister targets 'price equilibrium' to support sustainable demand for electric car batteries
 - The country's production capacity for battery-grade nickel is expected to quadruple to 1 Mt by 2030, said Septian Hario Seto, the deputy co-ordinating minister for investment and mining.
 - Capacity for nickel pig iron, which is used to make stainless steel, is projected to expand by up to 15% in three years from the current 1.9 Mt, he added.
- **Battery recycling grants go toward research, collection**
 - U.S. Department of Energy identifies 17 projects related to battery recycling that will receive a combined \$62 million in funding.
- **Tesla vehicle sales decline as EV interest cools**
 - As the world's largest maker of premium EVs, Tesla's performance is a close EV market barometer.
 - By the numbers: The automaker delivered 386,810 vehicles worldwide in the first quarter, down 8.5% from the same period a year earlier.
- **Li-Cycle to cut 17% of staff amid battery recycling growing pains**
 - Battery recycler Li-Cycle, opens new tab plans to lay off 17% of its staff - including three senior executives - as it pares its ambitious global growth plans in order to save cash and focus on building a crucial processing facility in New York.
- **EViF newsletter: Beware Chinese OEMs struggling for growth**
 - The headline is simple: BYD's breakneck growth slowed down in the last three months, in particular in February, where the firm recorded its lowest monthly passenger BEV sales since May '22.
 - Nor is BYD the only Chinese OEM experiencing a deceleration. Li Auto has seen its Q1 sales grow by 53%, admittedly. But this is still lower than a 66% annual growth rate in Q1 last year.
 - Peer Nio actually saw sales in Q1 shrink by 3% YoY, compared to 28% and 20% annual growth in the first quarter of the two previous years.
 - And while Xpeng recorded better Q1 progress than a year ago, with a 20% increase compared to a 5% drop, Q1'23 represented the nadir of the firm's slump in sales after it failed to refresh its line-up sufficiently quickly. In contrast it sold 40,000 vehicles in Q3 and 60,000 in Q4 so, even accounting for seasonality, the drop back to under 22,000 deliveries in Q1 is disappointing.

Green Rush: Mining the Energy Revolution

- [Episode 1 - Clean Energy Roadmaps Overview](#): Phil Harris, Kitco Contributor
- [Episode 2 - Palladium & Rhodium](#): 'There is life left in the internal combustion engine' — Mitsubishi's Jonathan Butler
- [Episode 3 – Silver the Industrial Metal & Solar PV](#): Phillips S. Baker, Jr - President & CEO Hecla Mining Company & Chairman of the Silver Institute
- **Episode 4 – ESG – Environmental, Social & Governance: Scaling Responsibly Mined Critical Minerals** with special guests James Gavilan, Principal & Advisor, Gavilan Commodities LLC, and Lyle Trytten, President, Trytten Consulting Services (In post-production. Due out Monday 4/8/24)
- **Episode 5 – Copper – The Electrification Metal** – with special guest Bart Melek, Managing Director & Global Head of Commodity Strategy (recording 4/10)
- **Episode 6 – PGM's in the Hydrogen Economy** – with special guest Philipp Walter, Heraeus Business Development (recording 4/17)



Regards – Matt

44 Ru Ruthenium	45 Rh Rhodium	46 Pd Palladium	47 Ag Silver
76 Os Osmium	77 Ir Iridium	78 Pt Platinum	79 Au Gold

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