
## Weekly Precious Metals News Articles: May 7, 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 trades near a 3-month high after a weaker-than-expected U.S. April jobs report**
  - Gold prices climbed to their highest level in almost three months Friday after a closely watched reading of U.S. labor conditions in the U.S. for the month was much weaker than forecast.
  - U.S. nonfarm payrolls were "significantly below recent estimates," said Jason Teed, co-portfolio manager of the Gold Bullion Strategy Fund QGLDX.
    https://www.msn.com/en-us/money/markets/gold-trades-near-a-3-month-high-after-a-weaker-than-expected-us-april-jobs-report/ar-BB1gtbFj?ocid=BingNewsSearch
- **Gold races past $1,800/oz as bond yields, dollar slide**
  - Gold jumped over 1% on Thursday with a weaker dollar and easing Treasury yields propelling it over the key $1,800 psychological level.
    https://www.cnbc.com/2021/05/06/gold-markets-bond-yields-us-jobs-data.html
- **Arkansas removes sales tax from gold and silver, more U.S. states to follow?**
  - Monday, Arkansas Gov. Asa Hutchinson signed legislation that ended sales taxation on gold, silver, platinum, and palladium bullion and coins, making them easier to be used as money in the state.
  - It has been a long journey for the many proponents of the legislation. It was first introduced in 2018 but failed to make enough progress through the state's legislative bodies.
    https://www.kitco.com/news/2021-05-04/Arkansas-removes-sales-tax-from-gold-and-silver-more-U-S-states-to-follow.html
- **Gold Demand Trends Q1 2021**
  - Strengthening consumer demand mitigated the impact of ETF outflows as global economies continued to recover. Q1 gold demand (excluding OTC) was 815.7t, virtually on a par with Q4 2020, but down 23% compared with Q1 2020.
    https://www.gold.org/goldhub/research/gold-demand-trends/gold-demand-trends-q1-2021

## Semiconductor Related Articles (impacting Precious Metals electronics):

- **Intel seeks US$10bn in public subsidies toward construction of EU chip factory**
  - Intel Corp wants 8 billion euros (US$9.7 billion) in public subsidies toward building a semiconductor factory in Europe, CEO Pat Gelsinger said on Friday, as the region seeks to reduce its reliance on imports amid a shortage of supplies.
  - "What we're asking from both the US and the European governments is to make it competitive for us to do it here, compared to in Asia."

https://www.taipeitimes.com/News/biz/archives/2021/05/03/2003756717

- **BE Semiconductor plans US, Taiwan expansion as chip demand soars**
  - Chipmaking equipment supplier BE Semiconductor said it planned to boost its operations in the USA & Taiwan as its top customers ramp up investment to meet a surge in chip demand.
  - The Dutch-based maker of semiconductor assembly and packaging equipment also said it expected second-quarter revenue to rise between 30% and 40% from the previous quarter. https://www.reuters.com/world/europe/be-semiconductor-plans-us-taiwan-expansion-chip-demand-soars-2021-04-30/
- **TSMC Planning Up to Six Fabs in Arizona**
  - TSMC, the world's largest contract chipmaker, announced in May last year that it would build an initial fab with US$12 billion fab in Arizona. The 12-inch (300mm) wafer fab in Phoenix is expected to start mass production in 2024 with a planned output of 20,000 wafers per month using the company's most sophisticated 5-nanometer process technology.
  - "The United States requested it (the initial fab). Internally TSMC is planning to build up to six fabs," the person said, adding that it was not possible to give a timeframe. https://www.taipeitimes.com/News/front/archives/2021/05/05/2003756869
- **Memory prices up sharply, boding well for S. Korean chipmakers**
  - "PC DRAM prices are now expected to undergo a 23-28% Q/Q growth in 2Q21 due to the increased production of notebook computers," TrendForce said in a recent report.
  - They also expected server DRAM prices to increase by 20-25% Q/Q in the April-June period as companies ramp up their investment for IT systems and cloud migration. https://en.yna.co.kr/view/AEN20210430006700320
- **Chip shortage to continue into fall: TSMC boss**
  https://asiatimes.com/2021/05/chip-shortage-to-continue-into-fall-tsmc-boss/
- **Chip shortage to last for couple of years: Intel CEO**
  - The global semiconductor shortage roiling a wide range of industries is not likely to be resolved for a few more years, Intel Corp chief executive officer Pat Gelsinger said on Sunday. The company is reworking some of its factories to increase production and address the chip shortage in the auto industry, he said in an interview with CBS News.
  - It might take at least several months for the strain on supply to begin easing, he added. https://www.taipeitimes.com/News/biz/archives/2021/05/04/2003756775
- **Tablet and Chromebook Shipments Continue to Surge During the First Quarter, IDC**
  - Sales of tablets and Chromebooks remain on fire. Tablets had an outstanding first quarter of 2021 (1Q21) with 55.2% Y/Y growth and shipments totaling 39.9 million units, according to preliminary data from the International Data Corporation. Growth of this magnitude has not been seen since the third quarter of 2013 when the tablet market grew by 56.9% Y/Y. While Chromebooks and tablets can serve different customers, both remain in high demand. Chromebook shipments totaled 13 million units in 1Q21, up from 2.8 million in 1Q20. https://www.idc.com/getdoc.jsp?containerId=prUS47648021
- **Chip shortage highlights U.S. dependence on fragile supply chain**
  - 75% of semiconductors, or microchips, the tiny operating brains in just about every modern device, are manufactured in Asia. Lesley Stahl talks with leading-edge chip manufacturers, TSMC and Intel, about the global chip shortage and the future of the industry.
  - A problem because relying on one region, especially one as unpredictable as Asia, is highly risky. Intel has been lobbying the U.S. government to help revive chip manufacturing at home – with incentives, subsidies, and-or tax breaks, the way the governments of Taiwan, Singapore, and Israel have done. The White House is responding, proposing $50 billion for the semiconductor industry in the U.S. as part of President Biden's infrastructure plan. https://www.cbsnews.com/news/semiconductor-chip-shortage-60-minutes-2021-05-02/

## Silver

- **Silver Could Continue to Outshine Gold | ETF Trends**
  - The World Bank has a positive silver outlook. Analysts argued silver prices could rise 22% this year https://www.etftrends.com/silver-could-continue-to-outshine-gold/
- **Silver Price: Key Levels to Look Out For in the New Month**
  - One of the factors that are likely to impact silver price in the new month is President Biden's infrastructure plan. In addition to its role as a safe-haven, silver is also an industrial metal. With the announcement of the $2 trillion US infrastructure plan came the proposal for a 10-year extension of the Investment Tax Credit (ITC). A tax credit is the income tax reduction for an individual or firm. In the case of the ITC, a proprietor enjoys a 26% deduction of the installation costs for a solar energy system. Notably, silver is largely used in manufacturing solar panels. As such, the approval of Biden's proposal will boost the metal's demand. https://invezz.com/news/2021/05/03/silver-price-key-levels-new-month/
- **Virginia's largest-ever group of (16.1 GW) solar projects gets the green light**
  - The nine-project group was approved by state regulators and will be a critical part of the 16 GW of renewable energy Virginia plans to add by 2035. https://pv-magazine-usa.com/2021/05/03/virginias-largest-ever-group-of-solar-projects-gets-the-green-light/?utm_source=dlvr.it&utm_medium=linkedin
- **Dozens, and counting, of uses for silver - MINING.COM**
  - Catalog of different Silver demand sources and applications. https://www.mining.com/dozens-and-counting-of-uses-for-silver/
- **Silver Institute: Silver News**
  - Pandemic Concerns Result in Strong Silver Investment Demand in 2020
  - Silver Composite Makes "ForeverPen" Possible
  - Silver Brings Breakthrough in Flexible Body Sensors
  - Silver Enhances Rapid Testing Method for COVID-19 Cases
  - Silver Helps Detect Pesticides on Fruits and Vegetables
  - A silver lining for extreme electronics – ScienceDaily

  https://www.silverinstitute.org/wp-content/uploads/2021/05/SNApr2021.pdf
- **A silver lining for extreme electronics**
  - Researchers are building tougher circuits to help withstand the grueling demands of energy production, space exploration and more.
  - Tomorrow's cutting-edge technology will need electronics that can tolerate extreme conditions. That's why a group of researchers led by Michigan State University's Jason Nicholas is building stronger circuits today. https://www.sciencedaily.com/releases/2021/04/210430093225.htm

## Precious Metals Mining:

- **Implats records higher PGM sales in spite of big disruptions**
  - Implats reported higher 6E PGM sales volumes during the three months ended March 2021 compared to a year ago despite grappling with Eskom load shedding and community unrest.
  - Implats said on Friday that 6E PGM sales volumes were up 14% to 862,000 ounces in the three months ended March 2021, broadly in line with contractual requirements with some additional destocking of iridium and ruthenium as demand and pricing improved for these metals. 6E PGM is platinum, palladium, rhodium, iridium, ruthenium and gold. read://https_www.iol.co.za/?url=https%3A%2F%2Fwww.iol.co.za%2Fbusiness-report%2Fcompanies%2Fimplats-records-higher-pgm-sales-in-spite-of-big-disruptions-a26e30b5-b148-4914-bca5-b6db3ce8b751

- **Ride the Lightning – The future of Electrifying Mines in BC**
  - Of all industrial greenhouse gas producers, transport, the fossil fuel industry and heavy industry are among the largest emitters. In B.C., the estimated gross greenhouse gases produced in 2017 by heavy industry (which includes mining) accounted for 10% of the provincial total.
  - As part of the initiative, Clean Energy BC is planning to improve on decision-making, interconnection times and consistency in environmental monitoring standards. To successfully implement a switch to electric equipment, the overall effect on mining operations, electrical interconnections and environmental impacts needs to be understood.
    https://www.bba.ca/publication/ride-the-lightning-the-future-of-electrifying-mines-in-bc/
- **By-product metals are technologically essential but have problematic supply**
  - Matt: 5-year-old article that is still pertinent today.
  - The growth in technological innovation that has occurred over the past decades has, in part, been possible because an increasing number of metals of the periodic table are used to perform specialized functions. However, there have been increasing concerns regarding the reliability of supply of some of these metals. A main contributor to these concerns is the fact that many of these metals are recovered only as by-products from a limited number of geopolitically concentrated ore deposits, rendering their supplies unable to respond to rapid changes in demand. Companionality is the degree to which a metal is obtained largely or entirely as a by-product of one or more host metals from geologic ores.
    http://europepmc.org/article/PMC/4640630

## E-Waste & Precious Metals Recycle Related:

- **BEST4HY - Sustainable Solutions for Recycling of End-Of-Life Hydrogen Technologies**
  - BEST4Hy overall objective is to bring to TRL5 recycling technologies adapted specifically for PEMFC and SOFC which would ensure the maximization of recycling of critical raw materials including Platinum Group Materials (PGMs), rare earth elements, cobalt and nickel.
  - The End of Life (EoL) strategy supported is accompanied by LCC and LCA (lifetime carbon emissions assessments &) evaluations to ensure it delivers the best (cost effective and low environmental impact) material for closed loop and open loop recycling.
  - Materials are evaluated for quality and performance in remanufactured PEMFC & stacks and SOFC, so to deliver a concrete validation of the circularity potential within the hydrogen device industry.
    https://best4hy-project.eu/
- **EnviroLeach Technologies: The Future For E-Waste Recycling Is Local**
  - E-waste is one of the world's fastest growing waste streams. There is a lot of value in e-waste.
  - Recycling is not only good for the environment, but an alternative source of both precious and base metals. EnviroLeach has developed a patent-protected process to efficiently and locally manage the recycling of valuable PCBAs.
    https://seekingalpha.com/instablog/11446721-goldinvest-de/5587244-enviroleach-technologies-future-for-e-waste-recycling-is-local
- **A Sustainable Way To Mine Rare Earth Elements From Old Tech Devices: Agromining Explained**
  - REEs extraction from e-wastes is beginning to gain momentum in the U.S. that can address national supply chain risks. Recent studies show that only 25% of 1.8 million tons of domestic e-waste were recycled or reused in 2018.
  - Two highly applied and mature REE extraction techniques are leaching and solvent extraction. Leaching is a simple process, requiring low energy and providing high selectivity of REEs. Solvent extraction is an effective separation technique that is commercially used and produces high purity single REE solution or mixed REE compounds, but it does struggle from inefficiencies, being time-consuming and labor-intensive.

https://www.forbes.com/sites/aminmirkouei/2021/05/04/a-sustainable-way-to-mine-rare-earth-elements-from-old-tech-devices-agromining-explained/?sh=5f19a01a4081

- **Catalysts Q&A: Brad Cook, Sabin Metal Corp.**
  - Sabin has been working very hard for the last several years on two capacity issues. Firstly, the addition of a third kiln unit for the thermal reduction process that reduces carbon/coke contamination, which is now complete, certified and in use. Secondly, our overall refinery expansion, which will allow Sabin to make more pure platinum and palladium faster than ever before. We expect to announce the increased refining capability later this year.
    https://www.hydrocarbonengineering.com/special-reports/05052021/catalysts-qa-brad-cook-sabin-metal/
- **Police recover more than a thousand stolen catalytic converters**
  - Between 19 and 23 April, police officers visited 926 sites, including catalytic converter processing plants, scrap metal dealers, vehicle dismantlers and catalytic converter buyers.
  - They also made 56 arrests, stopped 664 vehicles, recovered 1,037 stolen catalytic converters and 297 items of stolen property, and identified 244 offences.
    https://www.motoringresearch.com/car-news/police-recover-stolen-catalytic-converters/

## Platinum

- **Platinum HDV Diesel Auto Catalyst: Cummins Posts Higher Revenue, Income in Q1**
  - The Cummins engine segment posted leading Q1 revenue of $2.5 billion, +14% from the 2020 period. Sales +10% in North America and +24% in international markets.
  - On-highway revenues +15% driven by strong demand in the North American truck and pickup markets, while off-highway revenues +9% on the strength of international construction markets.
  - Cummins forecast North American Class 8 (semi truck) production in 2021 will grow +45% compared with a year earlier. Classes 6-7 Medium and Heavy truck production will grow +35% from 2020.
    https://www.ttnews.com/articles/cummins-posts-higher-revenue-income-q1
- **Silicone industry regresses due to high demand, low capacity**
  - The global silicone market is experiencing deja vu, reminiscent of 2017-18, with tight supply, soaring prices and escalating demand as the Asia-Pacific and North American markets open up following the pandemic and upstream manufacturers of silicone monomers lag in capacity.
  - With Asia serving as the bellwether region—more than half of the world's silicone usage now is in the Asia-Pacific space, with China as the world's largest consumer—trends there tend to reach North America within a couple months. In Asia, the average price of silicone was up more than 50 percent year-over-year this past March and more than 25 percent year-over-year for February 2021
    https://www.rubbernews.com/silicone/silicone-industry-regresses-due-high-demand-low-capacity
- **Analysis reveals benefits of using longer covered stent in patients w/rare congenital heart disease**
  - Investigators analysed the NuMED 10-zig Covered CP (CCP) Stent, which is balloon expandable and intended for permanent implant in patients. It is composed of 0.013" platinum-iridium wire arranged in a 10 zig pattern that is laser welded at each joint and then over brazed with 24K gold.
    https://www.news-medical.net/news/20210430/Analysis-reveals-benefits-of-using-longer-covered-stent-in-patients-with-rare-congenital-heart-disease.aspx
- **Sustainable chemical synthesis with platinum**
  - Researchers used platinum and aluminum compounds to create a catalyst which enables chemical reactions that allows for more sustainable production of so-called aromatic hydrocarbons. The catalyst could significantly reduce energy usage in industrial and pharmaceutical processes. It also allows for a wider range of sustainable sources to feed the processes, which could reduce the demand for fossil fuels required by them.
    https://www.chemeurope.com/en/news/1170782/sustainable-chemical-synthesis-with-platinum.html
- **Fuel Cells/Hydrogen Economy Related Articles:**

- **Driving the hydrogen economy forward**
  - In a world where collaboration and joint ventures are becoming the norm, Hyundai Motor Company and INEOS announced signing a memorandum of understanding to explore new opportunities to accelerate the global hydrogen economy.
    https://northcliffmelvilletimes.co.za/341446/driving-the-hydrogen-economy-forward/
- **Daimler and Volvo partner to reduce cost of hydrogen fuel cells**
  - The automakers are working jointly to reduce the price tag by five or six times by 2027.
    https://www.hydrogenfuelnews.com/cost-of-hydrogen-fuel-cells/8544682/?mc_cid=023fe265c7&mc_eid=70c1246d58
- **Long-haul truck fuel cells partnership forms between auto rivals**
  - Rivals Daimler Trucks and Volvo AB have announced that they are working together to produce long-haul truck fuel cells. The joint venture was recently announced under the name cellcentric, was formed with the purpose of establishing production of long-haul truck fuel cells at the "gigafactory" level. The intention is to begin producing at that level in Europe by 2025.
    https://www.hydrogenfuelnews.com/long-haul-truck-fuel-cells/8544823/?mc_cid=7897c1a47d&mc_eid=70c1246d58
- **No pollution: What stops hydrogen-powered cars from booming**
  - With a list of advantages as impressive as that, one may feel that Hydrogen powered cars are the future. So then why aren't there many takers for this technology? Why have many reputed automakers refused to invest in this fuel type?
    http://timesofindia.indiatimes.com/articleshow/82405666.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst
- **First nanoscale look at a reaction that limits the efficiency of generating clean hydrogen fuel**
  - But a key step in that process, known as the oxygen evolution reaction or OER, has proven to be a bottleneck. Today it's only about 75% efficient, and the precious metal catalysts used to accelerate the reaction, like platinum and iridium, are rare and expensive.
  - Researchers discovered that most of the catalytic activity took place on the edges of particles, and they were able to observe the chemical interactions between the particle and the surrounding electrolyte at a scale of billionths of a meter as they turned up the voltage to drive the reaction.
    https://phys.org/news/2021-05-nanoscale-reaction-limits-efficiency-hydrogen.html
- **EU companies commit to continental green hydrogen pipeline**
  - European gas and electricity companies GASCADE, Gasuine, RWE and Shell are participating in the AquaDuctus green hydrogen transportation project.
  - The project will include the installation of a pipeline to transport green hydrogen from the North Sea to Germany and the rest of continental Europe. The pipeline is part of the AquaVentus initiative designed to install 10GW of electrolysis capacity for green hydrogen production from offshore wind power between Heligoland and the Dogger sand bank.
  - Once complete in 2035, the AquaDuctus pipeline is expected to transport up to one million tonnes of green hydrogen per annum and help the bloc to scale up its green hydrogen production and decarbonise economies.
    https://www.powerengineeringint.com/hydrogen/eu-companies-commit-to-continental-green-hydrogen-pipeline/
- **Umicore and Anglo-American partner to develop PGM-based technology for LOHC hydrogen applications in FCEVs**
  - Umicore and Anglo American, through its PGMs business Anglo American Platinum, announced a research and development collaboration agreement to develop platinum group metal PGM-based catalysts for liquid organic hydrogen carrier (LOHC) applications on fuel cell electric

vehicles (FCEVs) and other mobile applications. This catalyst technology has the potential to transform the way hydrogen can be stored and used to power FCEVs.
https://www.greencarcongress.com/2021/05/20210502-umicore.html

## Palladium

- **UK car sales rebound after 'one of darkest years in automotive history'**
  - About 141,600 vehicles were sold last month, a total was 30 times higher than in April 2020, when the first national lockdown wiped out 97% of sales and reduced the motor trade to levels not seen since 1946.
    https://www.msn.com/en-gb/money/news/uk-car-sales-rebound-after-e2-80-98one-of-darkest-years-in-automotive-history-e2-80-99/ar-BB1gnil6?ocid=BingNewsSearch
- **Palladium Price Analysis: XPD/USD to have a clear way to the 3487/3598 zone above 3053 – Commerzbank**
  - "Palladium reached new all-time highs at 3020. It is now in our target zone. We have no fewer than 3 point and figure targets in the 3038-3053 target zone.
    https://www.fxstreet.com/news/palladium-price-analysis-xpd-usd-to-have-a-clear-way-to-the-3487-3598-zone-above-3053-commerzbank-202105051034
- **Palladium touches an all-time record high above $3,000 an ounce**
  - "As the thought of the world coming back gets stronger and stronger and personal transport likely to be popular in a post COVID world, palladium, needed in almost every car, rings the all-time price bell," said R. Michael Jones, CEO of Platinum Group Metals Ltd.
    https://www.marketwatch.com/story/palladium-touches-an-all-time-record-high-above-3-000-an-ounce-11620148603?reflink=mw_share_email
- **Conference report: SAE WCX 2021 Digital Summit**
  - A discussion panel on next generation powertrains identified a number of challenges along the way to low carbon mobility. The conception of "carbon neutral" road transport is based on the prerequisite of carbon neutral electricity generation, and includes various mixes of battery electric, hydrogen fuel cell, liquid e-fuels, and biofuel powertrains.
    https://dieselnet.com/news/2021/04sae.php

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

- **Use of ruthenium in fuel cells set to turn down as green hydrogen trend turns up – Heraeus**
  - The use of ruthenium in fuel cells is poised to decline in line with the growing trend towards the generation of green hydrogen. Ru is one part of a catalyst system in fuel cells, with platinum. The role of the Ru to oxidize the carbon monoxide and by doing so, remove the carbon monoxide from the surface of the platinum to prevent surface clogging, which lowers the activity of platinum-based electrocatalysts in fuel cells. Ru fulfills this activity-enhancing role in **both methanol and $H_2$ fuel cells**.
  - "You're talking here about 0.03 g to about 0.07 g of ruthenium per kilowatt," very low loadings.
    https://www.engineeringnews.co.za/article/use-of-ruthenium-in-fuel-cells-set-to-turn-down-as-green-hydrogen-trend-turns-up-heraeus-2021-05-04
- **Magnetic material breaks super-fast switching record**
  - The researchers achieved their unprecedented switching speeds in an alloy called MRG, first synthesized by the group in 2014 from manganese, ruthenium and gallium. In the experiment, the team hit thin films of MRG with bursts of red laser light, delivering megawatts of power in less than a billionth of a second.
    https://phys.org/news/2021-05-magnetic-material-super-fast.html
- **Sibanye-Stillwater: About PGMs**

- Several of the fuel cell technologies make use of PGMs, principally platinum, ruthenium and iridium, to catalyse their processes.
  https://www.sibanyestillwater.com/about-us/about-pgms/

- **Ruthenium and Platinum PVD Targets: Hprobe announces a significant order for MRAM testing equipment from a tier-1 semiconductor manfacturor**
  - Matt: 2+% MRAM Market Share growing to 4% by year end. More embedded MRAM designs.
    https://mail.yahoo.com/d/folders/1/messages/ALkPAbwFi4rKYJFOrQNTkH8Fki0

## BEV / LiB Battery Market News

- **Umicore and BASF enter into a patent cross-license agreement**
  - Umicore and BASF have entered into a non-exclusive patent cross-license agreement covering a broad range of cathode materials and their precursors, including chemistries such as nickel manganese cobalt (NMC), nickel cobalt aluminum (NCA), nickel manganese cobalt aluminum (NMCA) and high manganese (HLM).
    https://www.umicore.com/en/newsroom/news/umicore-and-basf-enter-into-a-patent-cross-license-agreement/
- **Britain set to stockpile metals for electric cars to beat Chinese threat -The Telegraph**
  - Britain is exploring the creation of a national stockpile of so-called rare earth metals amid rising fears that country's efforts to adopt electric cars are at risk from a Chinese stranglehold on supplies, The Telegraph reported on Wednesday.
  - Officials at the Department for Business are discussing options to protect the United Kingdom's access to vital materials including lithium and cobalt, the report added.
    https://www.reuters.com/world/uk/britain-set-stockpile-metals-electric-cars-beat-chinese-threat-the-telegraph-2021-05-05/
- **IEA World Energy Outlook Special Report: The Role of Critical World Energy Outlook Special Report Minerals in Clean Energy Transitions**
  - Matt: Huge but extremely valuable report on the coming gaps in critical minerals to support the clean energy transition. Highly valuable material.
  - https://iea.blob.core.windows.net/assets/278ae0c8-28b8-402b-b9ab-6e45463c273f/TheRoleofCriticalMineralsinCleanEnergyTransitions.pdf
- **Global prices of raw materials soar high | Arab News**
  - Copper in the past week hit a 10-year high.
  - Bloomberg's agriculture Commodity Price Index has climbed 22% this year, highest level since 2016.
  - Crude oil has risen 30 percent in the past year.
  - Lumber has tripled over the past 12 months, and has added $36,000 to the cost of a new house.
  - Tin also hit its highest level since 2011, as the price doubled in the past year.
  - Oil global demand is accelerating with reopening of economies following the pandemic shutdowns. The price of gasoline at the pump in the US has risen to $2.89 a gallon from $1.77 a year ago.
    https://www.arabnews.com/node/1852696/business-economy
- **1 in 5 electric vehicle owners in California switched back to gas because charging their cars is a hassle, new research shows**
  - Roughly 20% of electric vehicle owners in California replaced their cars with gas ones, a new study shows. The main reason drivers made the switch was the inconvenience of charging.
  - The findings suggest new challenges facing the growth of the nascent electric vehicle market.
    https://www.businessinsider.com/electric-car-owners-switching-gas-charging-a-hassle-study-2021-4
- **Nickel: The Critical Metal That Will Drive the Electric Vehicle Revolution**
  - The industry is faced with limited options to expand capacity. These options include the following:
  - Exploitation of lower quality laterite ores that have lower nickel grades along with significant amounts of other metal contaminants that make processing more complex and more expensive. At

present, high pressure acid leaching (HPAL) is the process of choice for the extraction of nickel from low grade limonitic laterite ores. In its present state of development, HPAL technology may not be able to economically process lower quality ores.

- Exploitation of additional sulphide ore bodies. It is estimated that about 40% of current nickel reserves are sulphides. However, many commercially viable ore bodies have already been depleted and those that remain are complex.
  https://s2.q4cdn.com/343762060/files/doc_downloads/whitepapers/Nickel-The-Critical-Metal-May-3-21.pdf

- **Battery Metals Are Hot, but These Miners Can't Get Investors**
  - Small mining companies in North America are struggling to attract funding, despite growing demand for lithium and cobalt for electric vehicles and batteries
    https://www-wsj-com.cdn.ampproject.org/c/s/www.wsj.com/amp/articles/battery-metals-are-hot-but-these-miners-cant-get-investors-11619175601
- **Chile output falls for 10th consecutive month, adding fuel to copper price rally**
  - The world's top copper producer Chile saw output of the red metal fall for the tenth consecutive month in March, government statistics agency INE said on Friday.
  - Copper output fell 1.3% in March, to 491,720 tonnes, the agency said, coinciding with a raft of new restrictions on movement and commerce, following the Southern Hemisphere's summer holidays.
  - The copper price topped $10,000 a tonne for the first time since 2011 on Thursday, nearing the all-time high set that year as rebounding economies stoke demand and mines struggle to keep up.
    https://www.mining.com/chile-output-falls-for-10th-consecutive-adding-fuel-to-copper-price-rally/
- **Deepest Backwardation Since '07 Shows World Short on Commodities - Bloomberg**
  - Demand for materials from oil to copper and grains is surging
  - Supply tightness comes as economies emerge from the pandemic
    https://www.bloomberg.com/news/articles/2021-04-30/deepest-backwardation-since-07-shows-world-short-on-commodities
- **Report: $60/kWh Battery Pack Price Will Make EV's Cheaper Than Combustion**
  - If costs can be driven down that far, the total cost of ownership for an EV would average 26 cents per mile, compared to 27 cents per mile for an internal-combustion car, Howell said in the interview.
    https://www.greencarreports.com/news/1132072_report-60-kwh-battery-pack-price-will-make-evs-cheaper-than-combustion

**Regards –**