



## Weekly Precious Metals News Articles: November 19, 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 on the back foot as markets await central banks' inflation response**
  - Dollar dips from 16-month highs as rally takes a pause
  - Gold could trade in \$1,850-\$1,875 range in near term-analyst  
<https://www.reuters.com/article/global-precious-idUSL4N2S92K9>
- **Team engineers new way to get medication past the blood-brain barrier**
  - Getting medication past the brain's unique and protective blood vessels, known as the blood-brain barrier, is one of the biggest challenges in treating brain and central nervous system diseases, said Dr. Zhenpeng Qin, associate professor of mechanical engineering at UT Dallas and co-corresponding author of the study that describes the method. The technique uses light and gold nanoparticles to pry open temporarily these barriers — called tight junctions — to allow medication to reach its target.  
<https://www.eurekalert.org/news-releases/934750>
- **New drug delivery could improve prostate cancer treatment**
  - The research team at Queen's have developed a new nanomedicine comprised of tiny gold particles, coated in a small peptide called RALA. If these nanoparticles are present in tumour cells when treated with radiotherapy, they increase the cell killing potential of this conventional treatment, helping to reduce the risk of disease relapse. In the absence of radiation, the gold nanoparticles are not directly toxic, meaning that risk of treatment related toxicity is low.  
<https://www.selectscience.net/industry-news/new-drug-delivery-could-significantly-improve-treatment-outcomes-for-localised-prostate-cancer/?artID=56104>
- **Gold Could Be The Unexpected Secret Weapon We Need Against Antibiotic Resistance**
  - Researchers from the Southern University of Science and Technology and Fudan University in China, and the University of Leeds in the UK, recently joined forces to repackage gold nanoclusters to make them more appealing to bacteria and less damaging to our own bodies.
  - By weaving the gold into two molecules with contrasting levels of electrostatic stickiness, the team built a particle that has the potential to punch holes in the defenses of many common bacterial pathogens without hanging around to harm surrounding tissues.  
<https://www.sciencealert.com/a-sprinkle-of-gold-dust-could-make-bacteria-susceptible-to-old-antibiotics-again>

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

- **Washington spurns Intel's plan for China production**

- The White House spurned a plan by Intel Corp to increase production in China over security concerns, dealing a setback to an idea pitched as a fix for US chip shortages, people familiar with the deliberations said. Intel, the world's largest chipmaker, has proposed using a factory in Chengdu, China, to manufacture silicon wafers, said the people, who asked not to be identified because the discussions were private. That production could have been online by the end of next year, helping ease a global supply crunch, but at the same time, Intel has been seeking federal assistance to ramp up research and production in the US. <https://www.taipeitimes.com/News/front/archives/2021/11/14/2003767843>
- **Japan plans to boost support for chip production**
  - Japan plans to boost support for chip production
  - The Japanese government would begin preparing a bill to expand financial aid aimed at increasing local production of semiconductors by domestic and foreign companies, the Yomiuri Shimbun reported yesterday. Japanese Prime Minister Fumio Kishida plans to submit the bill to an ordinary Diet session this year, the daily reported, citing people it did not identify who belong to the administration and ruling party. <https://www.taipeitimes.com/News/biz/archives/2021/11/15/2003767872>
- **Annual (Semiconductor) Revenue Growth to Skyrocket Among Top 25**
  - The semiconductor market is forecast to increase 23% this year, fueled by changing habits caused by the Covid-19 pandemic and the subsequent economic rebound from it in 2021. A strong 20% increase in semiconductor unit shipments coupled with a 3% increase in the total semiconductor average selling price (ASP) is driving this growth. An increase of 23% would be the largest gain in the global semiconductor market since 2010 when semiconductor sales soared 34% following the financial meltdown and global recession in 2008 and 2009. <https://www.icinsights.com/news/bulletins/Annual-Revenue-Growth-To-Skyrocket-Among-Top-25/>

## Silver

- **Silver Institute: 2021 INTERIM SILVER MARKET REVIEW – by Metals Focus**
  - 30-page slide deck presented in the virtual conference this week  
PDF Presentation: [https://www.silverinstitute.org/wp-content/uploads/2021/11/SilverMarket2021\\_InterimReview.pdf](https://www.silverinstitute.org/wp-content/uploads/2021/11/SilverMarket2021_InterimReview.pdf)  
Video Playback: <https://portal.xyvid.com/Interimsilvermarketreview2021>
- **Industrial Demand for Silver Rebounding to a New High in 2021**
  - With each significant component of silver demand forecast to rise in 2021, global silver demand is set to reach 1.29 billion ounces, the first time it has exceeded 1 billion ounces since 2015.
  - The recovery in silver industrial demand from the pandemic will see this segment achieve a new high of 524 million ounces (Moz). In terms of some of the key segments, we estimate that photovoltaic demand will rise by 13% to over 110 Moz, a new high and highlighting silver's key role in the green economy. This will also underpin much of the forecast 10% gain in electrical/electronic offtake. Finally, brazing alloy & solder demand is set to improve by 10% in 2021, helped by a recovery in housing and construction, although this will still fall short of pre-pandemic levels. <https://www.globenewswire.com/news-release/2021/11/17/2336647/0/en/Industrial-Demand-for-Silver-Rebounding-to-a-New-High-in-2021.html>
- **Ford partners with GlobalFoundries to increase chip supplies**
  - Ford plans to increase its short- and long-term supply of semiconductor chips through a new partnership with GlobalFoundries.
  - The companies on Thursday announced the signing of a nonbinding agreement for a strategic partnership that aims to increase the supply of chips to Ford from GlobalFoundries.

<https://www.cNBC.com/2021/11/18/ford-partners-with-globalfoundries-to-increase-chip-supplies.html>

- **Here are 3 ways the green transition has supercharged silver demand, and who's in the hot seat**
  - As investors assess opportunities in the wake of COP26 and its commitments to rapidly scale up clean technology, "poor man's gold" is set for an extreme green makeover in three key areas.
  - 1. The solar energy industry, 2. Electric vehicles, 3. 5G (fifth generation technology) broadband cellular networks  
<https://stockhead.com.au/resources/here-are-3-ways-the-green-transition-has-supercharged-silver-demand-and-whos-in-the-hot-seat/>
- **High-Touch Surfaces Covered With a Silver-Impregnated Foil May Decrease Risk for Hospital-Acquired Infection**
  - In regard to high-touch surfaces in hospitals, covering the surface with a foil containing a silver-based agent may decrease the risk for transmission of important clinical pathogens. These findings, from a controlled trial, were published in Antimicrobial Resistance and Infection Control.  
<https://www.hematologyadvisor.com/general-medicine/antimicrobial-effectiveness-of-a-silver-impregnated-foil-on-high-touch-hospital-surfaces/>

## **Precious Metals Mining:**

- **Technology Key to Mining Sustainably Says Anglo American**
  - Miners will be essential to powering the energy transition, supplying everything from lithium for electric vehicle batteries, to copper for electricity grids. Craig Fish, head of treasury at Anglo American, talks about the prospects of a commodities supercycle, whether there is sufficient supply of these key raw materials, and how the mining industry can improve its environmental footprint. This interview is from BloombergNEF's London Summit on October 19.  
<https://www.bloomberg.com/news/videos/2021-11-17/technology-key-to-mining-sustainably-says-anglo-american-video>
- **Ivanplats to bring Platreef mine into production in 2024**
  - The mine, which also has mineralisation of nickel, copper, and gold, will use the existing Shaft 1 and a new concentrator to be built onsite which can process up to 770,000 tonnes per annum. Ivanplats will target high-grade areas near to the shaft to minimise initial capital costs.
  - Ivanplats is also sinking Shaft 2, alongside development of Shaft 1. Two additional 2.2 million tonne-per-annum concentrator modules will also be constructed, which will bring total mine production to 5.2 Mtpa.  
<https://www.miningmagazine.com/development/news/1421609/ivanplats-to-bring-platreef-mine-into-production-in-2024>
- **Sibanye-Stillwater lifts gold wage offer for third time in bid to resolve stand-off with union coalition**
  - The new offer as related to category 4 to 8 employees is for a R570 increase in the first year of the three-year wage proposal. It increases R640 more and R670 more in the second and third years. This compares to its last offer of R480 to R570 in years one and two and a R600 increase in year three.
  - Miners, artisans and officials would receive an increase of 4.5% in year one, 4.9% in year two and 4.9% in year three.  
<https://www.miningmx.com/top-story/48152-sibanye-stillwater-lifts-gold-wage-offer-for-third-time-in-bid-to-resolve-stand-off-with-union-coalition/>
- **What weakens one PGM miner strengthens the rest - Moneyweb**
  - Thoughts on Northam cornering Implats: the surprise Royal Bafokeng Platinum deal.  
<https://www.moneyweb.co.za/moneyweb-opinion/columnists/what-weakens-one-pgm-miner-strengthens-the-rest/>

## **E-Waste & Precious Metals Recycle Related:**

- **This Tech Trailblazer Is Recycling Platinum & Palladium From Catalytic Converters**
  - Small tech company Mineworx has partnered with a Tennessee recycling company to extract platinum and palladium from diesel catalytic converters in a ground-breaking method that bypasses smelting, a major polluter. "Mineworx has the only commercial facility for recovering precious metals from catalytic converter scrap without smelting," states the Canadian Mining Journal .  
<https://menafn.com/1103178432/This-Tech-Trailblazer-Is-Recycling-Platinum-Palladium-From-Catalytic-Converters>
- **In about-face, Apple unveils Self Service Repair program - E-Scrap News**
  - Apple will sell its parts and tools to individual consumers so they can make common repairs for iPhones, the company announced this week. Facing pressure from elected officials and investors, Apple on Nov. 17 announced its Self-Service Repair program, which will be available first for the iPhone 12 and 13 and then will include Mac computers with M1 chips.  
<https://resource-recycling.com/e-scrap/2021/11/18/in-about-face-apple-unveils-self-service-repair-program/>
- **Colt and N2S use microbes to recover precious metals from e-waste**
  - Six month bioleaching trial with Coventry University to keep gold and copper out of landfill  
<https://www.datacenterdynamics.com/en/news/colt-and-n2s-use-microbes-to-recover-precious-metals-from-e-waste/>
- **China's Coming EV Battery Waste Problem**
  - China is the world's largest EV market with over a cumulative 5.5 million sold to date as of March 2021. But these things have their own sustainability concerns.
  - There have been the concerns about environmental damage resulting from the extraction of elements like lithium and cobalt. But another concern has to do with the coming problem of waste. China is starting to experience the leading edge of this problem. In 2020, 200,000 tons of batteries were decommissioned, and the figure is anticipated to rise to 780,000 tons by 2025.
  - In this video, I want to look at China's looming EV battery waste problem. And what the world's biggest EV market is doing about it.  
<https://youtu.be/u-38O6jSyiQ>

## **Platinum**

- **WPIC: Metal for a Greener Future**
  - Developments at COP26 have strengthened the case for platinum-based hydrogen technologies  
[https://platinuminvestment.com/files/sixtysecs/WPIC\\_60seconds\\_Metal\\_for\\_a\\_greener\\_future\\_11172021.pdf](https://platinuminvestment.com/files/sixtysecs/WPIC_60seconds_Metal_for_a_greener_future_11172021.pdf)
- **Preventing Metabolic Adaptation in Cancer Cells with Platinum Nanofibers**
  - Recently, research published in the journal Organic Chemistry has presented a method for the prevention of metabolic adaptation in cancer cells using supramolecular nanostructures, namely platinum nanofibers.  
<https://www.azom.com/news.aspx?newsID=57324>

## **Fuel Cells/Hydrogen Economy Related Articles:**

- **Greener, Faster, Cheaper: A Combination of Battery and Fuel Cell Electric Technology Is Key to Successfully Decarbonising Global Transport - Hydrogen Council**
  - Both BEVs and FCEVs are needed to achieve net-zero economically and sustainably
  - A "combined world" will harness benefits of both technologies at a system level
  - It will also help de-risk the most significant transition in the automotive industry's historyx  
<https://hydrogencouncil.com/en/greener-faster-cheaper-a-combination-of-battery-and-fuel-cell-electric-technology-is-key-to-successfully-decarbonising-global-transport/>

- **Decarbonizing heavy-duty transportation: Is hydrogen the answer?**
  - Long-haul trucks and construction vehicles, known for running long hours and for many hundreds of miles at a time, represent more than 20% of transportation emissions. The path to decarbonization for these vehicles is much bumpier, due to the large amount of electrical energy needed to fulfill their job. Where powering a car battery at a charging station is sufficient to run your personal electric car, heavy-duty vehicles would require enormous batteries and several hours of charge time to store more than 50 times that energy.
  - Even with the latest fast charging technology, an electric heavy-duty vehicle would gain a mere two to three miles of range per minute of charge time. To put that in perspective, refueling with diesel fuel adds up to 100 miles per minute. In short, electrification alone isn't the answer to decarbonization. Where there's promise, however, is with hydrogen.  
<https://www.greenbiz.com/article/decarbonizing-heavy-duty-transportation-hydrogen-answer>
- **Ballard acquires Arcola Energy to help customers integrate fuel cell systems into heavy-duty mobility**
  - Ballard Power Systems has acquired Arcola Energy, a UK-based systems engineering company specializing in hydrogen fuel cell powertrain and vehicle systems integration. Ballard acquired 100% of Arcola for total upfront and earn-out cash and share consideration of up to US\$40 million, based on the achievement of certain performance milestones.  
<https://www.greencarcongress.com/2021/11/20211112-ballard.html>
- **Low-platinum catalyst developed to boost fuel cell commercialization**
  - Thinking about a solution to this issue, the group at USTC employed a sulphur-anchoring method of high-temperature to synthesize small-sized Pt intermetallic nanoparticle (i-NP) catalysts with ultralow Pt loading and high mass activity. Their experiment not only proved successful but also allowed them to establish i-NP libraries, including 46 types of Pt nanoparticles (NPs) to screen inexpensive and durable electrode materials as well as explore structure-activity relations of i-NPs systematically.  
<https://www.mining.com/low-platinum-catalyst-developed-to-boost-fuel-cell-commercialization/>
- **South Korea aims to burn millions of tonnes of clean hydrogen and ammonia for giga-scale power production**
  - The South Korean government has announced plans to burn vast amounts of hydrogen and ammonia for power production in the 2030s.
  - The Ministry of Trade, Industry and Energy said it wants to use a fuel mix of 30% hydrogen at all its gas-fired power plants by 2035, and 20% ammonia (NH<sub>3</sub>) at more than half of its coal power stations as early as 2030, as part of its plan to reach net-zero emissions by 2050.  
<https://www.rechargenews.com/energy-transition/south-korea-aims-to-burn-millions-of-tonnes-of-clean-hydrogen-and-ammonia-for-giga-scale-power-production/2-1-1099333>
- **The Anti-Tesla: Why Toyota Remains Hung Up On Hydrogen**  
<https://cleantechnica.com/2021/11/14/the-anti-tesla-why-toyota-remains-hung-up-on-hydrogen/>
- **Hydrogen venture Genvia agrees pilot projects in steel, cement sectors**
  - Genvia, a French-based clean hydrogen technology venture, has signed three pilot projects in the steel and cement industries intended to help scale up its electrolyser technology and decarbonise critical industrial sectors, oilfield services group Schlumberger Ltd (NYSE:SLB) said today.  
<https://renewablesnow.com/news/hydrogen-venture-genvia-agrees-pilot-projects-in-steel-cement-sectors-761962/>
- **As world's automakers scramble to go electric, Toyota bets on hydrogen**
  - Toyota's latest push into hydrogen tech comes as the world's biggest carmaker joins the rush to win a share of the growing market for battery electric vehicles.

- “Carbon neutrality is not about one having a single choice, but about keeping options open,” he said.
- By 2025, Toyota plans to have 15 EV models available and is investing \$13.5 billion over a decade to expand battery production.  
<https://www.cnbc.com/2021/11/16/toyota-ceo-races-hydrogen-car-amid-push-for-carbon-neutrality.html>

## **Palladium**

- **Palladium Price Analysis: XPD/USD to extend its race higher on a breach of October high at \$2,207**
  - Palladium (XPD/USD) has eroded the four-month downtrend. Now, the precious metal looks to surpass the October high at \$2,207 to extend its move higher.  
<https://www.fxstreet.com/news/palladium-price-analysis-xpd-usd-to-extend-its-race-higher-on-a-breach-of-october-high-at-2-207-commerzbank-202111171052>
- **Palladium Price Analysis: XPD/USD eases on the way to \$2,180**
  - Palladium seesaws around monthly peak, keeps key trend line breakout.
  - Firmer Momentum line strengthens bullish bias, \$2,460-75 becomes the key hurdle.  
<https://www.fxstreet.com/news/palladium-price-analysis-xpd-usd-eases-on-the-way-to-2-180-202111160528>
- **GM Says It’s Getting A “Better Flow” Of Semis and That All Plants In North America Are Operating Regularly**
  - Additionally, GM says that “most of its assembly plants in North America are now back to running regular production,” according to a report by Reuters.
  - A spokesperson from GM said: "In fact, the week of November 1 represented the first time since February that none of our North American assembly plants were idled due to the chip shortage."  
<https://www.zerohedge.com/markets/gm-says-its-getting-better-flow-semis-and-all-plants-north-america-are-operating-regularly>
- **Mobility Monthly Notes**
  - 5-minute read monthly newsletter of global emissions topics. Compliments Dr Ameya Joshi, Corning  
[https://mcusercontent.com/23b16fd0afc4a15543b1e5b53/files/a3479eea-28c5-bce8-826c-d93b1cda4ecd/MobilityNews\\_5\\_Min\\_Monthly\\_November\\_2021.pdf](https://mcusercontent.com/23b16fd0afc4a15543b1e5b53/files/a3479eea-28c5-bce8-826c-d93b1cda4ecd/MobilityNews_5_Min_Monthly_November_2021.pdf)

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

- **Ruthenium: Chemists discover new way to harness energy from ammonia**
  - The scientists were excited to find that the addition of ammonia to a metal catalyst containing the platinum-like element ruthenium spontaneously produced nitrogen, which means that no added energy was required. Instead, this process can be harnessed to produce electricity, with protons and nitrogen gas as byproducts. In addition, the metal complex can be recycled through exposure to oxygen and used repeatedly, all a much cleaner process than using carbon-based fuels.
  - “We figured out that, not only are we making nitrogen, we are making it under conditions that are completely unprecedented,” says Berry, who is the Lester McNall Professor of Chemistry and focuses his research efforts on transition metal chemistry. “To be able to complete the ammonia-to-nitrogen reaction under ambient conditions — and get energy — is a pretty big deal.”  
<https://news.wisc.edu/chemists-discover-new-way-to-harness-energy-from-ammonia/>
- **Ruthenium & Platinum: Taiwan's Semiconductor Research Institute developed an SOT-MRAM device based on a PMA technique**
  - The new device uses a perpendicular magnetic anisotropy (PMA) technique. According to the TSRI researchers, they are the second team to successfully produce MRAM chips based on PMA (Intel is the first team to have achieved this). The device is made from more than 30 layers of film, each about 0.4 nm high. To produce the films, the researchers used Applied Materials PVD systems.

<https://www.mram-info.com/taiwans-semiconductor-research-institute-developed-sot-mram-device-based-pma>

- **Iridium, Platinum and Ruthenium Catalyst: Will green hydrogen demand be too much for electrolyzers in only a few years?**
  - That report indicated that by the end of this decade, the worldwide supply of electrolyzers will have reached 47GW, but “could sit somewhere in the 30-40GW range”. Comparatively, there are 54GW of announced projects and 94GW of projects that are “pledged” according to the report. “The conclusion is that there is unlikely to be sufficient supply even for the proposed projects out to 2030 even in the lowest demand scenario.”  
<https://www.hydrogenfuelnews.com/green-hydrogen-demand-2030/8549483/>

## **Clean Energy General News (New Section)**

- **This will be the century of clean energy transition and mineral constraints with Matt Watson**
  - This will be the century of clean energy transition and mineral constraints says Matt Watson, founder, and president of Precious Metals Commodity Management LLC.  
<https://www.youtube.com/watch?v=dCOQm4C0gh8>
- **Large parts of the world are not ready for zero-emission vehicles, Toyota says**
  - Large parts of the world are not ready for zero-emission vehicles, which is why Toyota Motor Corp. did not sign a pledge this week to phase out fossil-fuel cars by 2040, the world’s largest auto maker said on Thursday.
  - Six major carmakers, including General Motors Co, Ford Motor Co., Sweden’s Volvo Cars and Daimler AG’s Mercedes-Benz, signed the Glasgow Declaration on Zero-Emission Cars and Vans, as did a number of countries including India.
  - But Toyota and No. 2 global auto maker Volkswagen AG, as well as crucial car markets the United States, China and Germany, did not.  
<https://www.theglobeandmail.com/business/international-business/article-large-parts-of-the-world-are-not-ready-for-zero-emission-vehicles/?>
- **United States adds nickel, zinc to critical minerals list**
  - Nickel and zinc are now deemed critical minerals by the United States.
  - The U.S. Geological Survey (USGS) is proposing both metals be included in the redrafted critical minerals list. The list has grown from 35 to 50 since the last iteration in 2018, but that largely reflects the splitting out of rare earth elements and precious group metals into separate entities.  
<https://www.reuters.com/article/us-critical-minerals-ahome-idUSKBN2I011L>
- **China's rare earths will no longer be ‘cheap’ as prices hit record highs - report**
  - China's rare earth prices have broken a 10-year high on Thursday, driven by the development of emerging industries, tight supplies and the consolidation of industries at the national level.  
<https://www.kitco.com/news/2021-11-12/China-s-rare-earths-will-no-longer-be-cheap-as-prices-hit-record-highs-report.html>
- **California Budgets \$1.4 Billion for Hydrogen Fueling and EV Charging Stations**
  - The California Energy Commission approved a three-year \$1.4 billion plan to help California achieve its electric vehicle charging and hydrogen refueling goals.
  - The CEC said the plan, approved on Monday, will support California Gov. Gavin Newsom’s executive order phasing out the sale of new gasoline-powered passenger vehicles by 2035.  
<https://timesofsandiego.com/tech/2021/11/16/california-budgets-1-4-billion-for-hydrogen-fueling-and-ev-charging-stations/aa>
- **(German Power Company) RWE lays out plans to invest billions in renewables**
  - “When you look long term, there is no way around hydrogen,” Markus Krebber tells CNBC.
  - There is excitement about the potential of green hydrogen in some quarters, but it remains expensive to produce.

<https://www.cnbc.com/2021/11/16/rwe-lays-out-plans-to-invest-billions-in-renewables.html>

- **Falling stocks pose problems for London Metal Exchange | Reuters**
  - They have since rebuilt to 49,900 tonnes but it's not just a copper problem. LME tin stocks have been at super-low levels for most of the year. Lead stocks are looking similarly depleted. Backwardation has become entrenched in both contracts' forward curve.
  - Indeed, total registered LME inventory has fallen by almost 600,000 tonnes since the start of the year. Stocks of all metals stand at 1.469 million tonnes, the lowest since 2008.  
<https://www.reuters.com/business/energy/falling-stocks-pose-problems-london-metal-exchange-andy-home-2021-11-12/>

## **BEV / LiB Battery Market News**

- **Global Energy Storage Market Set To Hit One Terawatt-Hour by 2030**
  - Energy storage installations round the world will reach a cumulative 358 gigawatts/1,028 gigawatt-hours by the end of 2030, more than twenty times larger than the 17 gigawatts/34 gigawatt-hours online at the end of 2020. This boom in stationary energy storage will require more than \$262 billion of investment, BNEF estimates.  
<https://www.altenergymag.com/story/2021/11/global-energy-storage-market-set-to-hit-one-terawatt-hour-by-2030/36258/>
- **Lithium Shortage May Stall Electric Car Revolution And Embed China's Lead**
  - The electric car revolution will stall in the West if supplies of crucial battery elements like lithium fail to keep up with the forecast huge increase in demand. This will drive battery prices higher, decimate profit margins, and the coveted \$100 per kWh battery, which would have signaled the arrival of affordable green vehicles, will remain on the launch pad.  
<https://www.forbes.com/sites/neilwinton/2021/11/14/lithium-shortage-may-stall-electric-car-revolution-and-embed-chinas-lead-report/>
- **Northvolt produces fully recycled battery cell**
  - Swedish battery maker Northvolt announced that it has produced its first battery cell with 100% recycled nickel, manganese and cobalt at its Northvolt Labs in the central city of Västerås.
  - The cell was manufactured as part of the company's recycling program Revolt.  
<https://www.mining.com/northvolt-produces-fully-recycled-battery-cell/>
- **Gotian High-Tech Announces a Nickel-Rich Li-Ion Battery Cell With 302 Wh/kg - Batteries News**
  - Guoxuan High-Tech usually gets headlines thanks to its partnership with Volkswagen. This time, the Chinese battery company will do that on its own merits. Guoxuan – aka Gotian or Gotion – said it has developed a nickel-rich lithium-ion cell with an energy density of 302 Wh/kg. That makes it the most energy-dense cell currently available. The best cells so far were the 2170 units made by Panasonic and used by Tesla, with an estimated energy density of 260 Wh/kg. That means that the new Gotion cells are 16% better than the ones the American EV maker buys. Although it does not look like much, it can make a massive difference in electric cars.  
<https://batteriesnews.com/gotion-high-tech-nickel-rich-li-ion-battery-cell-with-302-wh/kg/>
- **Johnson Matthey withdraws from battery materials market; ups hydrogen involvement**
  - “This decision will allow us to accelerate our investment and focus on more attractive growth areas, especially where we have leadership positions such as in hydrogen technologies, circularity and the decarbonization of the chemicals value chain.”
  - Johnson Matthey has also announced the signing of an MoU with newly established Norwegian company Hystar AS, a high-tech spin-out from SINTEF, one of Europe's largest independent research institutions. Hystar is backed by AP Ventures, a significant investor focused on breakthrough technologies in the fast-growing hydrogen industry. Under the agreement, Johnson Matthey will collaborate with Hystar to provide catalyst-coated membranes (CCMs) for use in its proton exchange

membrane (PEM) stack and electrolyzer system package, which offers a significant improvement in efficiency.

<https://www.pmw-magazine.com/news/electric-motorsport/johnson-matthey-withdraws-from-battery-materials-market-ups-hydrogen-involvement.html>

- **FREYR and Glencore sign supply contract for sustainable cobalt and expand collaboration for the responsible supply of battery materials**
  - FREYR Battery a developer of next-generation battery cell production capacity, and Glencore International AG, one of the world's largest global diversified natural resource companies, have signed a contract for the supply of up to 1,500 mt of high-grade, sustainably-sourced cobalt metal cut cathodes made from partially recycled cobalt produced at Glencore's Nikkelverk facility in Norway.  
<https://batteryindustry.tech/freyr-and-glencore-sign-supply-contract-for-sustainable-cobalt-and-expand-collaboration-for-the-responsible-supply-of-battery-materials/>
- **Elon Musk wants LFP batteries for Tesla. Here's why Korean battery trio shouldn't produce them**
  - LFP batteries have no recyclable value, and are more expensive than lithium-ion batteries when considering all factors  
<http://www.koreaherald.com/view.php?ud=20211114000037>
- **Used Car Battery Problems Take Shine Off China's "Green" New Energy Vehicles**
  - Industry data shows that the service life of lithium batteries used in electric vehicles is generally 5 to 8 years, and the service life under warranty is 4 to 6 years. That means, tens of thousands of electric car batteries will soon need to be discarded or recycled, and millions more down the road.
  - According to the latest data from China Automotive Technology and Research Center, the cumulative decommissioning of China's electric car batteries reached 200,000 tons in 2020 and the figure is estimated to climb to 780,000 tons by 2025.  
<https://www.zerohedge.com/technology/used-car-battery-problems-take-shine-chinas-green-new-energy-vehicles>
- **EV's Unsustainable Little Secret, Batteries Are the Weak Link in the Sustainability Chain**
  - Typically made from raw materials including cobalt, nickel and manganese, lithium-ion batteries are extremely expensive to produce and require high levels of mining activity.
  - Mining raw materials can lead to huge environmental destruction, releasing elements into the atmosphere that can contaminate soils and disrupt entire ecosystems. What's more, lithium-ion batteries are significantly more challenging to recycle, contributing to further environmental damage if improperly disposed of at the end of their life.
  - Aside from environmental devastation, lithium-ion batteries are also in short supply. Battery production capacity across the globe is expected to increase twenty-fold, but this won't be enough to meet the expected future demand.
  - Although several industry players are developing recycling methods and reducing the reliance on raw materials, any significant progress is far off. For now, to ensure demand is met and improve the output for using these materials, it's important for automakers to consider how they can make existing batteries last longer.  
<https://www.altenergymag.com/article/2021/10/electric-vehicles-unsustainable-little-secret-batteries-are-the-weak-link-in-the-sustainability-chain/36132>
- **America Isn't Ready for the Electric-Vehicle Revolution**  
<https://www.nytimes.com/2021/11/10/opinion/electric-vehicle-climate-battery.html>

Regards –