

Das Fachmagazin für Financial Intermediaries

finanzwelt extra



The Race for New Osmium Markets

A Limited Resource with Unlimited Potential

How Quantum Computing, Superconductivity, and Jewelry are connected!



Review, Information, and Forecast on the Rarest and Most Valuable Precious Metal of Our Time

A global osmium economy has sprung up around this formerly niche precious metal, consisting of many branches and companies. Jewelry manufacturers are setting up production lines, cutting companies are undergoing training, designers are coming to market with a variety of applications, a colorful array of manufacturers are refining their products, diamond dealers are switching to the unforgeable metal, traders are operating globally, and investors are jumping on board.

For many people, osmium has become the future. Mining, refining, purification, crystallization, certification, cutting, quality management, transport, trade, design, value preservation, insurance, manufacturing, and retail are just a few of the fields in which new qualifications have emerged. The new precious metal has thus given rise to an industry that is active internationally with high growth rates. In just ten years, more than 1,500 people have become employed in the osmium market. Tens of thousands of pieces have found proud owners, and osmium carpets adorn the necks, ears, wrists, and fingers of osmium enthusiasts. But behind the scenes of its use in Haute Joaillerie, a branch of research has grown that is now attracting the full attention of investors and family offices. High-tech applications of osmium can be found in quantum computing, high-temperature superconductivity, quantum sensor technology, medical technology, and precision engineering. Read on to find out what is changing.

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Reminder – What Exactly Is Osmium?

Osmium is a precious metal. It is the 76th element in the periodic table and, together with platinum, palladium, rhodium, ruthenium, and iridium, belongs to the platinum group metals. Like all precious metals, osmium is less reactive than most other elements and does not tarnish or corrode. It can be distinguished from other precious metals both chemically and optically. Osmium is the densest element and is characterized by a unique blue-silver sheen. Ethically available quantities were already declared exhausted in 2024. On Earth, osmium is still considered the rarest stable, non-radioactive element.

The metal was discovered in the winter of 1803–1804 by British chemist Smithson Tennant. Its first notable industrial use came in 1906, when the German company Osram used it to manufacture light bulb filaments. However, because osmium is rare and expensive to extract, it has never been widely used in industry. Today, osmium is primarily valued as a tangible asset and is also used in the jewelry industry to produce luxury accessories and watches.

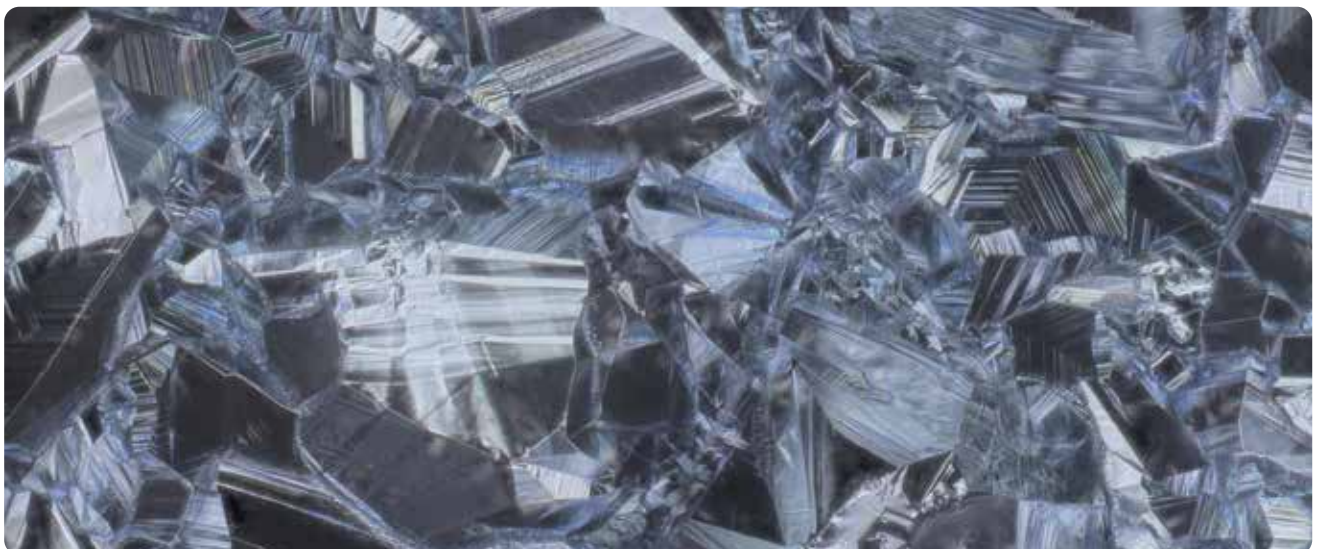
Osmium is obtained as a by-product of extracting other metals, primarily platinum. The yield is extremely low: only one ounce of pure osmium can be extracted from 10,000 tons of platinum ore. Of the estimated 17 cubic meters of osmium remaining in the Earth's crust, only a marginal

amount is likely recoverable, which is no longer significant for production. The reserves of raw osmium are controlled by the osmium institutes. Following the US embargo on Russia, the last remaining supply options are currently being classified as "unethical."

After separation from platinum and impurities, raw osmium is a light gray powder, commonly referred to as osmium sponge. Its most common oxygen compound is harmful to human health and is therefore not traded or made available to private individuals. Crystalline osmium, however, is the most precious of all precious metals and does not react with its environment. It is neither harmful to health nor does it cause allergies. The process of crystallization can be compared to the conversion of carbon into diamonds. Other solid forms of osmium exist, but crystallized osmium is the only form that has no effect on the human body. This makes crystalline osmium the ideal form for trading as a tangible asset and for use in jewelry production.

However, its new areas of application today also lie in the high-tech industry. Superconductivity and quantum computing are emerging as key innovation drivers for osmium, according to the latest research findings.

As a reminder – what is Osmium again?



Osmium on the Exciting Path to Market Share

Companies and universities anticipate a distribution battle on the horizon, which is expected to drive the future secondary market for the eighth and final precious metal.

“Drill, baby, drill” – a statement by US President Trump – made international headlines. If you want to use a \$400 million airplane to travel around the world alone, then, of course, it seems necessary to exploit the Earth’s reserves without restraint. The consequences are easy to foresee. Consuming more oil damages the climate and, within a few decades, depletes the resources our children and grandchildren will need to produce plastics that cannot be made without it. If we don’t want to follow Mr. Musk to Mars, the Earth must transition to a fully circular economy – and it should have done so yesterday. So much for the truisms labeled as “common sense.” What if the world’s leaders repeatedly miscalculate because they are thinking in too short a time frame?

In his book on critical metals, Ingo Wolf warned more than a decade ago against failing to stockpile metals such as indium, gallium, neodymium, tantalum, and germanium for tomorrow’s green technology. Political changes can cut off access to these metals immediately – and perhaps forever. That would mean the end of certain technologies. Humanity is on the verge of making the next striking mistake.

To clearly illustrate the situation, we would like to explain in a phone call how it might play out in 2045:



Hello Ms. Jones,

I work in purchasing at AI-Chip Mass Production Inc. Our company is developing the next generation of notebook processors that enable artificial intelligence with second-generation quantum computing using superconductors at room temperature.

The Osmium Institute in the USA provided us with your name, as you agreed that your data could be used for purchase inquiries. We have learned that you had 30 millicarat osmium incorporated into your wedding ring and that of your husband. I hope you still have the two rings. We would like to know if you would be interested in selling them to us. We pay well – and in exchange, you would receive two diamond rings, each featuring a synthetic 8-carat diamond.

It is clear that by this date, it is almost certain that every gram of osmium will already be in the hands of commodity investors, family offices, jewelry manufacturers, or jewelry owners. The market is important for osmium – and entirely justified. However, it is consuming the reserves that we will likely need in a few years to manufacture future products in eight key fields, based on current solid-state physics. Today’s research will become tomorrow’s products – but this can only happen if the necessary raw materials are available.

Availability can be easily achieved by purchasing at current prices on the market. However, in the future, it will also be possible to purchase from physical investors – provided you know these people. This database is the Osmium World Database, which identifies every owner as such. **Even in the Haute Joaillerie jewelry market, the X-code of a piece can be used to verify its certificate and the inlays used. This approach represents the ideal case for certifying jewelry containing osmium – and provides the ultimate protection against counterfeiting from major brands. The X-code also allows for future phone verification.** Even if commodity investors or jewelers have already worked with osmium, even if their profits were realized decades ago, the osmium can still be located, acquired, and used in the high-tech industry. All it takes is the foresight to think ahead and prepare for this process.

LET’S THINK AHEAD – and to this end, let’s take a look at the developments of the past year.

How is the Current Market for Osmium Structured?

Recently, everything has revolved around the mining of raw osmium, its processing in refineries, its high-purity purification by partners of the Osmium Institutes, its crystallization, its transfer to investors, and finally its acquisition by producers and high-tech companies.

In chronological order, here are the five important aspects of this process:

1) The origin of all business is raw osmium

If you believe the internet, there are many sources of osmium. However, most of them simply do not exist in the real world. You have probably never bought real raw osmium, have you? You shouldn't! Firstly, there is no such thing as osmium ore, and there are no osmium mines.

Osmium is a by-product of platinum and nickel processing. The refineries that could separate osmium from other metals during processing do not do so – not only because it is complex, expensive, and dangerous, but also because the extremely low concentrations simply do not make it worthwhile. Separating just 3 grams of osmium from 1,000 tons of platinum ore is not economical, even if the price of osmium exceeds 5,000 euros per gram. The real value comes from the high-purity purification and crystallization process. This produces crystalline osmium – neither harmful to health nor allergenic. Thanks to this property of the most precious of precious metals, it has already been recognized as a separate asset class in the financial and scientific sectors.

But back to the purchase of raw osmium: almost all information about available resources and reserves is incorrect. The data comes from books published in the 1970s, when individual deposits were extrapolated and published. Little or no consideration was given to where osmium can actually be obtained. Since there are no osmium mines, purchasing is always dependent on the production of associated platinum – which cannot stop or become inefficient due to a lack of use in catalytic converters.

Widespread testing methods involving XRF technology also often incorrectly identify iron as osmium. The laboratories

of the Osmium Institute have accumulated iron ore samples whose owners had assumed they contained large quantities of osmium. In reality, these were false analyses. Not a single sample of ores offered in recent years actually contained osmium.

The currently available reserves are stored at the Osmium Institute. They amount to 286 kg – enough to produce a few more quantum computers and to serve the jewelry market well. This is because osmium is used in quantities of less than a few milli-carats. Expressed this way, 1,430,000,000 milli-carats is much easier to understand than the figure in kilograms. Assuming a future price for crystalline osmium of two to five euros per milli-carats, the market remains small compared to industrial metals – but it is extremely significant.



2) How does tangible asset investment work, and how much patience do I really need?

A few years ago, the Osmium Institutes' top priority was to secure reserves of global osmium. The osmium had to come from ethically acceptable sources, be free of defined impurities, and have an initial purity of 3N in order to be highly purified and crystallized. For this reason, the Osmium Institutes have acquired the world's reserves from reputable refiners and clean sources in recent years.

To this end, family offices and UHNWI are now also being allowed into the circle of commodity investors. This open access makes it possible to purchase the crystalline product and support research, development, and production in the institutes – as has been done extremely successfully with jewelry designers since 2024. The provision of osmium to designers and manufacturers has opened up a whole universe of jewelry worlds.

Family offices, however, invest in the resource osmium or in technology companies that require a defined supply of osmium for their work. Only when research fields for real product applications have been fully developed is the raw material used.

For this target group, the luxury market is merely an alternative exit. This strategy of family offices leads to a clear recommendation for investors in tangible assets: hold on to it until the market is completely divided and depleted, because

that is likely when the call will come. It is irrelevant whether you pick up the phone yourself or your children do. For this reason, Osmium is often nick-named the "Next-Generation Metal."

3) How is storage handled?

Storing strategic precious metals requires compliance with certain criteria that are crucial for security and cost efficiency. Naturally, the security of the storage facility must be guaranteed, but at the same time, direct access must be available whenever necessary – regardless of a global pandemic, such as COVID-19, that restricts crossing national borders.

Insurance of deposits must be guaranteed, and the tranches to be stored should not incur minimum quantity or large quantity surcharges. Perhaps most important, however, is the inspection of incoming goods. Only genuine items are stored, and most – if not all – storage facilities rely on certificates and are unable to perform their own storage analyses.

In the case of the Osmium Institute, the high-security facilities are already in place, as the rarest and most expensive precious metal is already stored there. It therefore makes sense to store platinum, palladium, and gold there as well. With annual storage costs of just 0.5% of the asset's value, it is likely the most affordable warehouse in Europe. The verification performed in the in-house laboratory should





not be underestimated, as many stored assets do not match what is stated on the certificate.

The warehouse in Murnau is currently being expanded to create a facility with an even higher security standard in the rocky landscape of Lake Walchensee.

4) Which markets are leading the race?

One always finds out too late when a new innovation reaches market maturity. By then, you can still invest in the company, but the market pie has essentially already been divided.

How will this play out in the osmium markets of the future? What can we realistically expect? Until now, we all assumed that the osmium jewelry market would be the final market. But it has now expanded in a way that perfectly complements both strategically possible directions.

First, there is the question of markets. Today, the situation is clear, as the jewelry market dominates the osmium business. With falling diamond prices, Osmavé is taking on the role of diamonds in part of the jewelry of the future.

Over a longer period, research had not yet been productive enough to show that applications in other spectacular fields would emerge. Today, we have come further. It is no

This brings us to the two possible developments:

- a. The high-tech industry consumes all available osmium, leaving none for jewelry. In this scenario, the jewelry segment becomes an exit for commodity investors who have waited long enough.
- b. The high-tech industry develops too slowly to generate sufficient profit. Then, the total amount of available crystalline osmium will be consumed by the jewelry market and – due to the costly recycling process – will only find its way into low-consumption industries serving extremely wealthy customers.

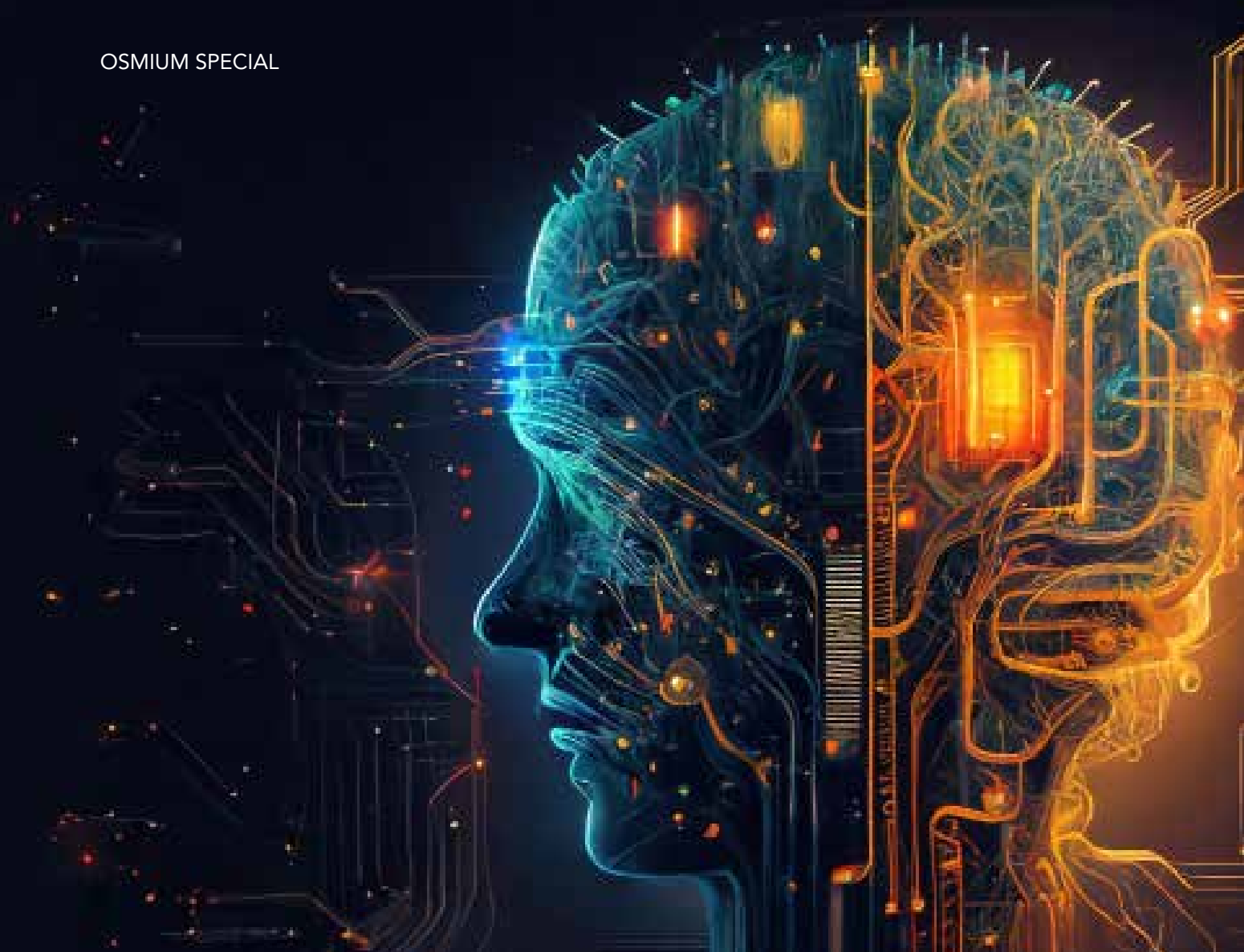
longer a question of whether osmium will be used, but in which market it will appear first.

5) Where will osmium be in thirty years?

It is striking that no matter which path the future takes, it will come down to one scenario: osmium will run out. So what is the task of commodity investors, institutions, and family offices? We all need to keep our eyes open to see which industry develops first, because this industry will be the first to have buyers – and this is also where prices will be set in the future. Above all, it will determine which applications osmium will ultimately serve.

However, some predictions can already be made today. Since we are dealing with an extremely limited resource that can only be supplied in very small quantities as new material, it is important to consider recycling. Recovering osmium from quantum computers will probably be neither possible nor economical, as the quantities per device are simply too small. If osmium ends up in medicines, it is effectively lost for obvious reasons. Osmium can be separated from alloys and coatings, but the situation is similarly difficult as in the jewelry market. The metal must be granulated, burned, sublimated, reduced, and then highly purified and crystallized multiple times – making the process extremely expensive. As a result, reserves will continue to approach zero.

Consider gold, for which all these processes are relatively easy and which will continue to be mined around the world for centuries to come. Even this metal is rising significantly in price. How, then, will a technology carrier such as osmium react? The challenge lies in foresight and patience – the way long-term investments work for the next generation of technology and the family.



Osmium: The Underestimated Resource of the Quantum Revolution

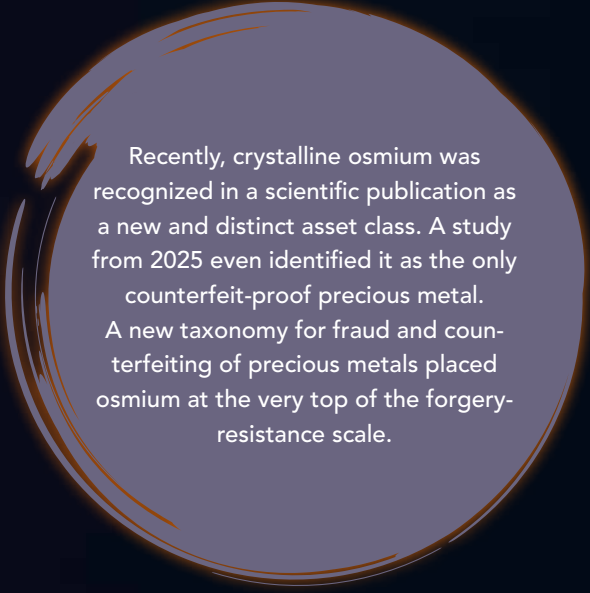
A glittering element in the shadows – yet priceless as a high-tech metal

In a high-security laboratory at an institute in Oregon, a tiny crystal rests in a glass container – barely bigger than a grain of salt, yet of immeasurable value. It is made of osmium, the rarest stable element on Earth and the last precious metal to be brought to market. The scientist handling it is not talking about jewelry or catalysts, but about something even bigger.

The Future of Information Processing and the Evolution of Artificial Intelligence

“Osmium has the potential to become the silicon of the quantum age,” he says – a bold and visionary statement,

because until now, osmium has only shone in the glittering world of Haute Joaillerie as a special jewelry metal. But that could soon expand to the high-tech industry, quantum computing, and AI. Only a few kilograms of the precious metal osmium – discovered by British chemist Smithson Tennant – are mined each year, a tiny amount compared to gold or silver. The largest reserves are stored in the international osmium institutes, in a kind of osmium Fort Knox. Osmium belongs to the platinum group metals and has the highest known density of all stable elements. Osmium is extremely hard, highly wear-resistant, and has one of the strongest spin-orbit couplings of any element.



Recently, crystalline osmium was recognized in a scientific publication as a new and distinct asset class. A study from 2025 even identified it as the only counterfeit-proof precious metal. A new taxonomy for fraud and counterfeiting of precious metals placed osmium at the very top of the forgery-resistance scale.

Its exceptional chemical stability, high value density, shielding against gamma radiation, extreme reflectivity in parallel solar radiation, and other properties make it the “superlative” among precious metals – not only for physical experiments, but also for applications that require exceptional durability in microscopic components and circuits.

Until now, osmium has been something of an exotic metal, used almost exclusively in Haute Joaillerie. In the

world of the rich and famous, osmium-based jewelry is gradually replacing diamonds, whose value has fallen. Watches with osmium dials are already fetching up to 415,000 euros. Its triumphant advance in the jewelry industry across 40 countries now seems unstoppable. The most expensive chessboard made of osmium, shown at the bottom of page 11, costs almost one million euros – and that is just for the material.

But now new industries are entering the scene:

- Second-Generation Quantum Computing
- Quantum Sensor Technology, Electron Microscopy
- Superconductivity in Condensed Matter Physics
- Material Composition for Alloys and Coatings
- Catalysis, Relays, and Switching Contacts
- Medical Technology and Medication
- Military Technology, Turbine Construction, Space Engines, Nozzle Tips
- Neuro-Implants
- Combustion Chamber Coatings in Hypersonic Engines (Military)



In recent years, osmium has gained importance in the field of tangible assets, as it has been introduced as a tamper-proof, non-reproducible, and rare physical asset in the form of bars and disks – particularly for family offices and ultra-high-net-worth individuals.

Osmium is also gaining importance in organometallic chemistry, where it serves as a catalyst – for example, in the osmium tetroxide-mediated dihydroxylation of alkenes. Osmium complexes with organic ligands offer great potential, providing long-lasting, controllable excited states that may be useful in photonic quantum communication systems. Osmium hydrides formed under high pressure even show signs of high-temperature superconductivity – another breakthrough for applications under extreme conditions in superconducting quantum hardware for satellites, space travel, or magnetic systems. Until now, osmium had received little attention in electronics.

It was considered too expensive, too rare, and too difficult to process. However, the perception of osmium is shifting thanks to quantum research, which is seeking materials with unique electronic, magnetic, and photonic properties. This is where osmium begins to play in a new league.

Quantum News

A promising candidate is lithium osmium oxide (Li OsO), which has an unusual honeycomb-like crystal structure. This structure produces a phenomenon in which electron spins remain in a constantly fluctuating state – a so-called quantum spin liquid. Such states are particularly important for quantum computers, as they can enable stable, error-tolerant qubits.

Researchers at Oregon State University have developed this new material as an important step toward the next generation of supercomputers. These “quantum computers” will be able to solve problems far beyond the reach of existing machines, while operating much faster and consuming significantly less energy.

In the new compound, lithium osmium oxide, osmium atoms form a honeycomb-like lattice that amplifies a phenomenon called “magnetic frustration,” which could give rise to a quantum spin liquid, as predicted by theorists in condensed matter physics.

Prof. Mas Subramanian, Chair of Materials Science at OSU, explains: “In a permanent magnet, electrons spin in alignment like compass needles – that is, all in the same direction. But in a frustrated magnet, the atomic arrangement prevents the electron spins from aligning orderly. Instead, they remain in a constantly fluctuating state, analogous to how ions behave in a liquid.”

The lithium osmium oxide discovered at OSU shows no signs of magnetic order, even when cooled to near absolute zero, suggesting that an underlying quantum spin liquid state is possible for the compound.

“We are excited about this new development because it expands the search for new quantum spin liquid materials that could revolutionize the way we process and store data,” said Subramanian.

“The phenomenon of quantum spin liquid has so far been demonstrated in very few inorganic materials. Osmium has all the key properties needed to form compounds that can maintain the liquid state of quantum spin,” said Arthur Ramirez, a condensed matter physicist at the University of California, Santa Cruz, and one of the co-authors of the paper. He noted that this compound is the

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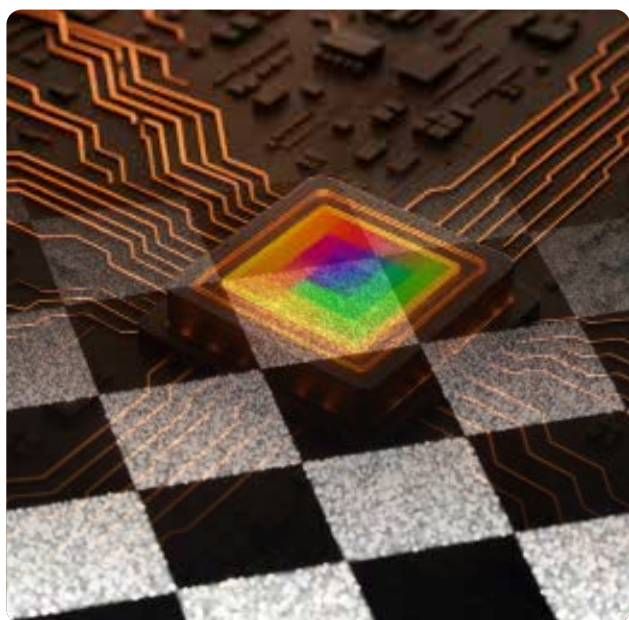
first honeycomb-structured material containing osmium and expects others will follow.

Materials chemists and condensed matter physicists involved in synthesis, theory, and measurements are collaborating to advance emerging sciences such as quantum spin liquids. The next step for Subramanian's team is to explore the chemistry required to create different perfectly ordered crystal structures with osmium. The research is funded by the National Science Foundation through its DMREF program – Designing Materials to Revolutionize and Engineer our Future. Osmium institutes have stepped up to support such applications.

Control over reserves and resources is becoming geographically significant and increasingly political. As with rare earths or metals like gallium, indium, and germanium, osmium is emerging as a pawn in global strategic interests. Almost the entire world's reserves are owned by the Osmium Institute.

The concept of quantum computing is based on the ability of subatomic particles to exist in more than one state at a time. Classical computing relies on bits – pieces of information that exist in one of two states, 0 or 1. In quantum computing, information is represented by quantum bits, or qubits, which can process far more information than a simple 0 or 1, because they can exist in any “superposition” of these values.

To visualize bits and qubits, imagine a sphere. A bit can only occupy one of the two poles of the sphere, while a qubit can be anywhere on its surface. This allows for much greater potential in information storage and significantly lower energy consumption.



Should osmium find high-tech applications in quantum hardware, demand and prices could skyrocket – driven by nations seeking a role in the second generation of quantum computers and sensors. The geopolitical chess game for the remaining reserves of this “elusive metal” has already begun. Osmium is not a new element, but it represents a fundamentally new opportunity. Its rise in quantum research could make it a key element in the next technological revolution. Soon it will be decided whether the future of osmium lies in quantum IT, high-tech applications, medicine, or ultra-luxury jewelry. Family offices and precious metal funds have begun acquiring physical osmium through osmium institutes and storing it with the global trade association, the Osmium World Council, as a strategic long-term asset, a political asset, or an investment in a high-tech future. With its unique electronic properties and natural scarcity, osmium is a resource that must be taken seriously by anyone aiming to participate in the age of AI and quantum computing.



Osmium on the exciting path to market share

Companies and universities see competition for distribution on the horizon, which will fuel the future secondary market for the eighth and final precious metal. The small quantities that refineries have been able to separate in recent decades led the osmium institutes to a critical strategic decision at the start of their work: should they sell the crystallized osmium on the tangible asset market and assign earnings to third parties, or retain the metal and market it piece by piece?



A middle course was chosen. Portions of the osmium were used to finance the expansion of the institute's structures. With the growing applications in the high-tech market of quantum computing, these challenges are increasing. Now, it is not only necessary to finance market development, but also the companies that will work with osmium in various high-tech fields in the future.

It remains to be seen whether medical technology will develop faster than quantum computing or military technology. For this reason, the strategy of family offices is also that of a long-term real investment: selecting the industries for osmium sales only when the maximum benefit is clearly apparent, ensuring the most sensible strategy is chosen.

Business, politics, and science are at a crossroads. Those who invest in, innovate with, or support osmium today may control a strategically important and irreplaceable resource tomorrow.

The X-Code is the Key

Guaranteed authenticity for all osmium
jewelry from leading brands

OSMIUM WORLD DATABASE

The Osmium World Database is a central database containing information on all certified crystalline osmium pieces, their owners and possessors, as well as registered wholesalers. It was possible to create this database because the market for crystallized osmium is still young, and every piece could be certified from the outset. In contrast, it would be impossible to set up a similar database for gold or silver. These markets have grown organically, are difficult to monitor, and their metals can be melted down for reuse. For osmium, a complex process is required to melt or reshape it, which would destroy the crystalline surface and eliminate the authenticity feature.

OSMIUM IDENTIFICATION CODE (OIC)

The Osmium Identification Code (OIC) is an alphanumeric code assigned to each piece of certified crystalline osmium, making it completely forgery-proof. The OIC is directly linked to the piece's data. The crystalline surface functions similarly to a human fingerprint: just as a person's identity is linked to a fingerprint scan, the identity of a piece of crystalline osmium is linked to its surface scan in the Osmium World Database – with 10,000 times greater accuracy per square millimeter.

OWNER CHANGE CODE (OCC)

The Owner Change Code (OCC) is a six-character code that serves as the ownership key for each piece of osmium. While the OIC identifies the piece itself, the OCC is the deed that links it to its owner. Buyers must register to obtain their OCC, which serves as the official certificate of ownership. Unlike the OIC, the OCC is a private key known only to the owner. Without the OCC, ownership of certified osmium cannot be proven or transferred. When osmium is purchased, the new OCC is sent to the new owner by email following the transfer of ownership.

X-CODES

X-Codes are codes assigned to jewelry or accessories that contain one or more pieces of osmium. They are also stored in the Osmium World Database. Together with the Osmium Customs Commodity Code Register, X-Codes helped achieve approval for the introduction of crystalline osmium into North America. Thanks to the HS code for crystalline osmium (7115.90.6000), it can now be transported and traded almost anywhere in the world without restrictions. The X-Code functions as the physical blockchain of osmium.

Foto: © Thares2020 - stock.adobe.com



Osmium Visionary Contest

When the Future Takes Shape

A new chapter in jewelry history doesn't begin every day – and not in every place. But with the Osmium Visionary Contest at this year's GemGenève, that is exactly what happened. In an industry where innovation often arrives cautiously and with a long lead time, the once almost unknown precious metal osmium has opened the doors to a new era.

A Competition with a Signal Effect

Launched by the German Osmium Institute and renowned jewelry expert Katerina Perez, the competition offered creative minds around the world a special stage. Investors from across the globe were eager to see how participants would expand the applications of osmium.

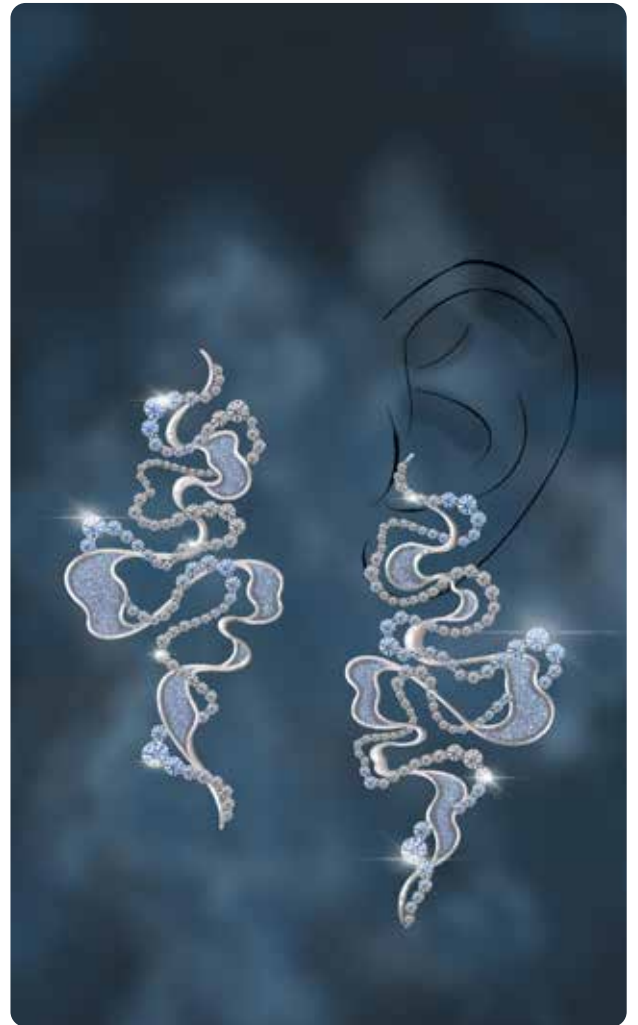
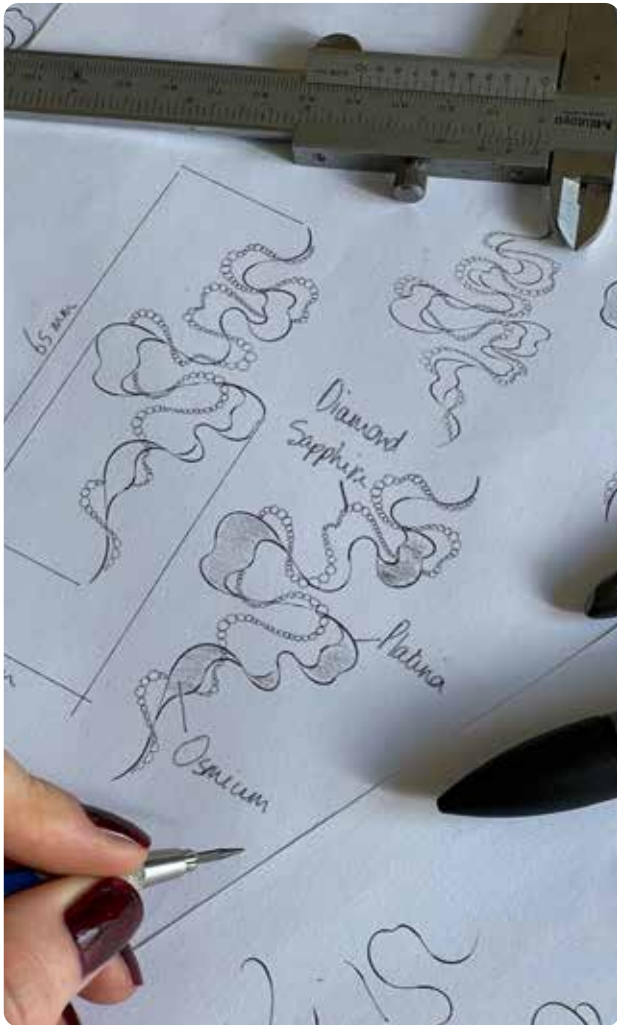
The focus was on new designs, emerging jewelers, and new sales opportunities for institutions – and subsequently, investors. The chance to experiment with the world's rarest and most valuable precious metal and present it in unique

pieces of jewelry for series production is fascinating. This is not only because of osmium's technical uniqueness, but above all because of its incomparable sparkle, visible to the naked eye from over 30 meters away. Unlike traditional precious metals, osmium is processed more like a gemstone.

Global Response and Creative Boom

The response to the competition was overwhelming. Several hundred artists and designers from around the world submitted designs ranging from minimalist creations to opulent, avant-garde jewelry concepts. Rings, pendants, bracelets, and entirely new forms emerged – all united by a creative exploration of a material that is only now being widely used and that many designers had never worked with before.

The spectrum of submissions not only reflected artistic diversity but also demonstrated how universally osmium is





understood as a medium, by both young talents and experienced jewelry artists alike.

A Strong Presence on International Stages

Even before they were produced, the three winning designs were presented in collaboration with the internationally renowned GemGenève trade fair. The goal now is to turn as many designs as possible into real pieces and show the professional world what is possible with osmium. After production, the pieces will be displayed at jewelry fairs across Europe, America, Asia, and the Middle East. The competition also received significant digital visibility: thanks to Katerina Perez’s social media reach and the support of the Osmium Institute, not only the 16 winners but also many other selected designs attracted worldwide attention.



The Jury: Voices from the Future

A seven-member international jury of experts from the osmium, design, and jewelry industries evaluated the submissions. Selecting the best designs was a real challenge due to the exceptionally high standard of entries – both professionally and logistically, as the jurors collaborated across eleven time zones.

The jury based its decisions on originality and innovation, technical feasibility, aesthetic appeal, sustainability, and social responsibility.



Voices from the Jury

Lorenz Bäumer (Place Vendôme, France):

“Osmium brings not only value, but character. Many designs were not only avant-garde, but marketable – a real starting signal for a new chapter in luxury jewelry.”

Frédéric Mané (France):

“Hardly any other material inspires as much as osmium. This competition has impressively demonstrated how art and science come together.”

Katerina Perez (France):

“Osmium looks like no other precious metal. The designs show that the new generation of jewelry designers is ready for real innovation.”

Tania Chan (Hong Kong):

“Some pieces were reminiscent of futuristic artifacts, others of modern art. Osmium brings an almost mystical aura to jewelry design.”

Richard Reis (Portugal):

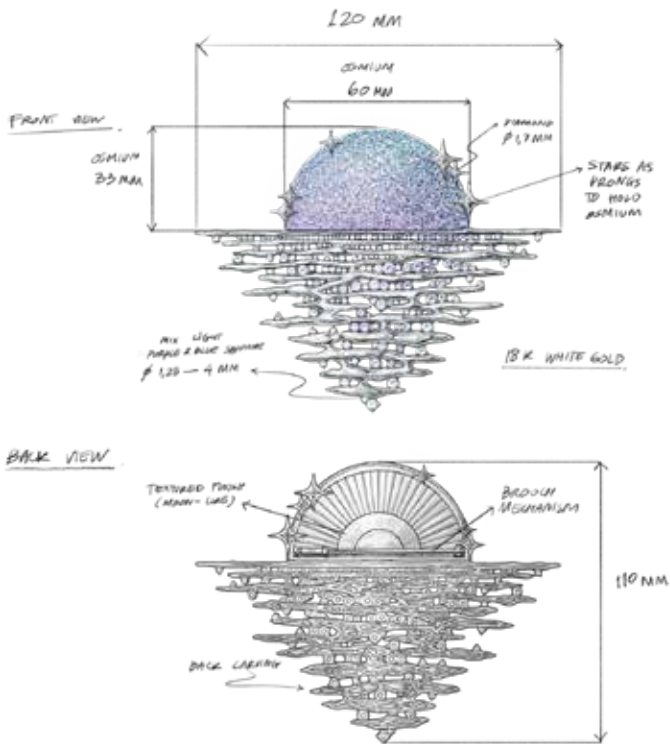
“A global movement has sprung up online around osmium: curious, bold, creative.”

Scarlett Clauss (Germany):

“Many designs tell stories – of origin, identity, and courage. That’s exactly what osmium stands for.”

Anthony Garcia (Brazil):

“The designs showed how osmium can be interpreted in many different ways – as a symbol of individuality and progress.”



Audience Award and Digital Participation

In addition to the main prizes, an audience award was presented. Jewelry enthusiasts were able to vote for their favorite among the top 20 designs via the social media channels of Katerina Perez and the Osmium Institute – a format that was enthusiastically received by the community.

Osmium – A Catalyst for the Future of the Industry

The Visionary Contest is more than just a design competition: it is a wake-up call for the industry. Osmium shows how much creative inspiration and new materials can enrich jewelry design. The metal is not only visually spectacular, but also a reliable, forgery-proof, and non-allergenic store of value, whose intrinsic worth as an investment is increasingly being recognized.

Education and Change

Although osmium has generated enormous interest in the design community, established industry players have so far offered limited structural support. Jewelry associations, such as the German association, do not yet provide programs for processing osmium or imparting knowledge about it. The Osmium Institute is responding proactively at an international level with free workshops, online courses, and guest lectures at universities. The strong interest in these educational initiatives demonstrates how open young designers in particular are to new materials and creative challenges.

CONCLUSION

A Material for Visionaries

Osmium is not just a new element in the periodic table of design – it is a statement. The Visionary Contest at Gem-Genève has shown that there are designers ready and willing to break new ground – and an audience eager to be inspired. In an industry that often relies on tradition, osmium brings a breath of fresh air: sparkling, forgery-proof, and full of future.

Safe use and new asset class

Crystalline osmium as a new asset class from the precious metals sector

The text printed on the right is an excerpt from the original text of the article published in Acta Montanistica Slovaca, Volume 30 (2025) <https://actamont.tuke.sk/> or <https://actamont.fberg.tuke.sk/>



"Crystalline osmium represents a new addition to the spectrum of physical precious metal investments. As the densest stable element in the periodic table, it was not used commercially for a long time due to the assumed toxicity of its oxide (osmium tetroxide). Only the technological development of controlled crystallization processes since the 2010s made it possible to safely process and standardize this precious metal. This study examines the material science properties, toxicological safety and economic relevance of crystalline osmium in comparison to classic precious metals such as gold, silver or platinum.

The analysis focuses on the chemical inertness and abrasion resistance of crystalline osmium structures as well as their complete inability to oxidize to OsO_4 under normal environmental conditions. These properties have been confirmed by long-term stability tests, thermogravimetric tests and independent testing institutes. The evaluation is complemented by a systematic market analysis: Despite limited production volumes and low market liquidity, crystalline osmium offers a unique profile as a long-term tangible asset and the jewelry industry due to its certified distinctiveness, high value density and stable storability.

These technological advances have established crystalline osmium as a suitable material for both the production of exclusive jewelry and for capital investment in physical assets. Its introduction to international markets was accompanied by US-Customs, specialized institutions that ensure uniform certification, monitor purity standards, and provide legal clarity for transportation and trade.

Crystalline osmium represents a distinct and clearly definable asset class within the group of precious metals. Its physical, structural and economic characteristics clearly distinguish it from traditional forms of investment such as gold, silver or platinum. With a density of 22.61 g/cm^3 , osmium outperforms all known stable elements. It also has a flat-crystallized, anisotropic surface characterized by high optical reflectance. This property is not only aesthetically striking, but also forms the basis for a material-immanent anti-counterfeiting measure: each piece of crystalline osmium reflects light in a unique, microscopically detectable pattern.

Another unique selling point of crystalline osmium is the scarcity of supply. Industrial production is limited to a few kilograms per year, as osmium, in the earth's crust, is one of the rarest metals on earth. Crystalline osmium is also clearly classified from a regulatory perspective: in its certified form, it is not subject to classification as a hazardous substance under the EU chemicals regulation REACH. This legal clarification is crucial for the international movement of goods and for duty-free import into numerous countries.

From a portfolio theory perspective, crystalline osmium offers interesting diversification potential as an alternative asset class, in particular due to its volatility structure and low correlation compared to established precious metals such as gold and silver.

Conclusion

This paper addresses two key issues: firstly, the toxicological and chemical safety of crystalline osmium is examined, particularly with regard to its safe use in consumer and investment products. Secondly, based on these results, the suitability of crystalline osmium as an independent asset class within the precious metal group is analyzed. The focus is on its physical properties, market structure and possible diversification effects in the context of modern portfolio theory. With regard to the first objective, a literature analysis showed that crystalline osmium in its stable, flat crystallized form is chemically inert and harmless to health. Several laboratory studies, including thermogravimetric analyses by SETARAM and long-term investigations by the Osmium-Institute and Timelab, show that crystalline osmium does not form any reactive oxidation products – even at elevated temperatures or under the influence of humidity, sweat or synthetic acids. The formation of osmium tetroxide, which has been associated with toxicological risks in the past, is ruled out under these conditions. This fulfills the prerequisite for long-term and safe use in high-quality consumer goods such as watches and jewelry, which is also supported by the international scientific literature. Crystalline osmium is neither harmful to health nor does it cause allergies.

The second objective – the valuation of crystalline osmium as an asset class – can also be answered positively. The combination of extreme density, a crystal structure that cannot be counterfeited, digital ownership traceability via the Osmium Identification Code, and a globally coordinated market structure establish a consistent investment profile. The supply shortage and the clear regulatory classification (including no classification as a hazardous substance under the REACH regulation) create conditions that promote long-term value retention and market stability. In addition, due to its independence within the precious metal group, crystalline osmium potentially shows low correlations to traditional precious metals or stock markets. This makes it suitable as a strategic addition to real asset portfolios with a focus on diversification and inflation protection.

In summary, this article shows that crystalline osmium can be classified not only as a safe precious metal from a scientific and regulatory point of view, but also as an independent, future-oriented asset class."

Osmium.com

The website is the international online shop for crystalline osmium, where it can be ordered and purchased in all forms by physical investors. The shop is easy to use, as the osmium business is generally divided into three categories:

- Ready-made boxes for physical investors, HNWI's, and family offices, ranging from \$500 to \$10 million per box.
- Cut collectibles in a wide variety of shapes.
- Monthly recurring purchases.

Of particular interest is the option to freely enter a desired amount or weight. The corresponding quantity of crystalline osmium is then adjusted in the package sizes to match the specified amount. This is possible because the smallest bars of crystalline osmium differ slightly from each other, allowing for precise quantities. For both free amount entries and boxed sets, pieces are selected to match each other in sparkle or to meet the preferences of the investor or jewelry producer.

Once a quantity, box, or specific shape is chosen, buyers can simply specify the number of pieces, place their order, pay the advance invoice, and receive the goods along with the original invoice within a few days, insured by the Osmium Institute. For smaller amounts up to €50,000, delivery is insured via air transport. Larger amounts are delivered personally by the institute's drivers. For international investors, air transport or storage in the new "International Osmium Depot" are available options.

The website is available in multiple languages and serves as the international hub for osmium distribution. It also features a press review and extensive useful information. Further in-depth or finance-oriented details can be found at www.osmium-family-offices.com, in the Osmium Compendium, and in the free Osmium reference book, available in German, English, Spanish, or French.

Internationally, over 1,000 advisors use referral codes to support end customers with information. Investors can also manage their osmium deposits via an app, allowing them to view their holdings at any time.



Reference Books on Osmium

Interesting facts about osmium can be found in many places on the internet, but several printed and digital publications are also available.

Osmium Textbook: A 240-page book on crystalline osmium is available free of charge from the Osmium Institute as a PDF in four languages or as a hard copy.

Facts and Faces: This A6 booklet, with 104 references and over 30 photos, provides a concise overview of the historical facts about osmium. The complex material is illustrated with images of osmium models, jewelry, and semi-finished products. Originally written in French, it is also available in German and English.

Osmium Quartets: For playful learning, two osmium-themed card quartets are available – one about precious metals in general and one specifically about osmium. They are available in German and English.

Osmium Compendium: This three-part compendium covers the current state of knowledge on osmium with the aim of being as comprehensive as possible.

Volume 1 – Historical Section: Covers topics from the discovery of osmium to its historical uses, including stories and myths about the discoverer.

Volume 2 – Historical Chemistry: Describes approximately 500 publications, explaining and evaluating them. The originals are accessible electronically in scanned form.

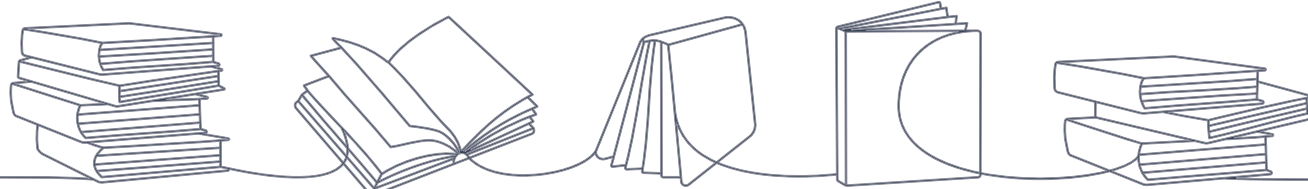
Volume 3 – Osmium in Modern Times: Begins with the opening of the Osmium Institutes following the discovery of crystallization. It also covers special topics such as osmium organic chemistry and highlights applications in the luxury, medical, and high-tech industries.

The compendium is never truly complete, as the annual yearbooks document developments in subsequent years, ensuring that the compendium continues to evolve year after year.



Press Reviews on Osmium:

The official press review is published on the website www.osmium-world-council.com and is regularly updated. It contains hundreds of press articles from around the world in multiple languages.



Official Websites

1. Osmium.com

The international main online shop for crystalline osmium. Osmium can be easily purchased online from any country in the world.

2. Osmium-Academy.com

A virtual academy and online learning platform. Provides information on courses and further training opportunities.

3. Osmium-Institute.com

Describes the tasks of the Osmium Institutes and their employees. All international institutes are listed by region.

4. Osmium-Onboarding.com

A portal for new partners to sign in. Referral codes can be entered, and users can generate their own codes. The site is designed for partners who want to make the osmium market their business and provide jewelers and end customers access to osmium.

5. Osmium-Identification-Code.com

Allows verification of the authenticity of osmium based on its crystal structure. The scan is available on the page as soon as the Osmium Identification Code (OIC) is entered, which is delivered with every piece of osmium.

6. Osmium-Fund.com

Explains how researchers can receive support with research materials, publications, and business start-ups. Funding can be requested directly via the site.

7. Osmium-Preis.com

Displays the current daily price of crystalline osmium along with corresponding charts. The price per gram determines the material price for all denominations and can be displayed in different currencies.

8. Oslery.com

Provides an overview of jewelry, designer pieces, series productions, osmium art, and exceptional exhibits from Osmium Jewelry. Functions both as an information platform and a global online shop.

9. Osmium-World-Council.com

The international point of contact for information about osmium and for collaborating with the Osmium Institutes to shape the osmium market.

10. Osmium-Family-Offices.com

A platform for HNWIs, UHNWIs, family offices, and multi-family offices. Designed for rapid exchange of information with these target groups, including a complete data room.

Inlay Calculations

The website www.osmium-jewelry.com was created to provide manufacturers and goldsmiths with a fast and reliable calculation tool for pricing individual pieces and series. The site also allows users to check their own stocks of crystalline osmium. Through X-Code creation, inlays that have already been installed can be linked to a piece of jewelry, with the OIC and surface scan certifying its authenticity.

The primary function of the website, however, is the management of consignment goods, including their transfer and distribution. To access these features, please log in via the Partner Login menu.

Schichtdicke ⓘ	ab X mm	0,25	0,4	0,55	0,7	0,8	20 g
	g/mm ²	0,0038	0,0064	0,0083	0,0105	0,0120	0,0135
		<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Die generelle Schichtdicke kann als Wunsch eingetragen werden. Abweichungen sind auf Basis der Verfügbarkeit möglich.							
Es gilt zu Bedenken, dass die Schichtdicke direkten Einfluss auf die folgenden Faktoren hat:							
Einfluss der Schichtdicke		0,0038	0,0064	0,0083	0,0105	0,0120	0,0135
Sparkle ⓘ		2	3	3	4	5	5
Biegesteifigkeit ⓘ		niedrig	→	→	→	→	hoch
Preis		niedrig	→	→	→	→	hoch
Filigranität		hoch	←	←	←	←	niedrig

Fact Sheet

Osmium-Institut zur Inverkehrbringung und Zertifizierung von Osmium GmbH

- **Headquarters:**
Kemmelallee 6, D-82418 Murnau am Staffelsee
Flagship store east, laboratory west side
- **Management:** Florian Hauner and
Stefanie Schulenberger
- **Directorate:** Scarlett Claus
- **Laboratory management:** Andreas Stamp
- **Museum Director:** Ingo Wolf
- **Hotline:** +49 (89) 7 44 88 88 88
- **Employees:** 18 employees in Germany
- **International affiliated dealers:** > 1.000
- **Number of institutes:** > 30 institutes on four continents (various types)
- **Start of crystallization on a technical scale:** 2013
- **Market launch of crystalline osmium:** 2014



Brief information about crystalline osmium:

In its crystallized form, osmium is both a tangible asset and a high-tech material as well as a jewelry metal. It is the last of the eight precious metals to be introduced to the market. Each bar and cut shape is certified by the Osmium Institute before entering circulation. Every piece of crystalline osmium is recorded in the Osmium World Database, and customs agreements exist on four continents. The data and scans are accessible to owners and customs authorities worldwide. This rarest of precious metals cannot be counterfeited, and safe, standardized trading of crystalline osmium is guaranteed locally in more than 30 countries by the osmium institutes.

Key Functions:

The Osmium Institutes ensure the smooth operation of production, analysis, packaging, logistics, training, and customer information across four continents.

Tasks:

The primary tasks of the Osmium Institutes include research, analysis, and providing information to all market participants, as well as publication and documentation. The institutes support universities and research institutions through www.osmium-fund.com, assisting with material procurement and the founding of high-tech start-ups.

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IMPRESSUM

AUTOR DIESER AUSGABE

Ingo Wolf
(V. i. S. d. P.)
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ART DIRECTOR

wirkungswerk Werbeagentur
Jan Risch
Jonas Reggelin
Yannick Reggelin
kontakt@wirkungswerk.com

VERLAG

FW-Verlag GmbH
Söhnleinstraße 17
65201 Wiesbaden
Tel.: (06 11) 267 66 - 0
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OSMIUM - The rarest precious metal in the world



Crystalline precious metal Osmium

- Unforgeable, rarest precious metal
- Last precious metal to be introduced to the market
- Highest value density of all precious metals
- Outstanding physical properties
- High-tech and Haute Joaillerie
- Game changer in the quantum world
- Absolutely secure transfer of ownership
- International customs database



Further information can be found here:

www.osmium.com

www.osmium-institute.com

www.osmium-family-offices.com

www.osmium-world-council.com

