

Heraeus



Raising the bar in Precious Metals and Technology

提昇貴金屬與材料科技領域





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## About Heraeus

### Leading in Hong Kong

Heraeus Limited (HLH) is one of the foremost companies in the precious metals business in Hong Kong and was incorporated in 1974, a member of the global Heraeus Group. Heraeus Metals Hong Kong Limited (HMH) is a subsidiary of Heraeus Limited and was established in 2012. With our strong international network, we offer the ability to trade all precious metals 24 hours a day.

Our principal activities in Hong Kong are the refining, trading, manufacturing and marketing of precious metals such as gold, silver, platinum, palladium, rhodium, iridium and ruthenium either as pure metals or as products. We are committed to long-term partnerships with our customers that reduce costs and lead-time, decrease on hand inventory, and increase profits for both ourselves and our clients. To highlight our continuing commitment to quality and service, we have been accredited to the ISO 9001:2008 standard for our entire production operation since 2009.

## 關於賀利氏公司

### 香港的領頭企業

賀利氏有限公司是香港貴金屬業務上領先的企業之一，於1974年在香港成立，是全球賀利氏集團其中的成員。賀利氏金屬香港有限公司是賀利氏有限公司的附屬公司，於2012年在香港成立。公司擁有強大的國際網絡，可提供二十四小時的貴金屬買賣及管理服務。

香港的主要業務是以貴金屬（如：黃金、白銀、鉑金、鈀金、銻、銦、鈳）作為純金屬或其產品的精煉、貿易、生產和市場營銷。我們致力與客戶建立長期合作夥伴的關係，既可降低成本、縮短交貨期、減少現有庫存，也可增加我們和客戶雙方的利潤。自2009年，我們整個生產經營已通過ISO9001：2008的標準認證，顯示我們將繼續致力於提升品質和服務的決心。



Trading 貴金屬貿易

Recycling 貴金屬回收

Chemical Products 貴金屬化工產品

### A Global Leader

The Germany-based precious metals and technology group Heraeus is a globally active family-owned enterprise with a history of more than 160 years. We provide high-end solutions to our customers to lastingly strengthen their competitive position. Our areas of competence include precious metals, materials and technologies, sensors, biomaterials and medical devices, quartz glass and specialty light sources. In the financial year 2013, Heraeus achieved a revenue from the sale of products of €3.6 billion, while the revenue from precious metal trading was €13.5 billion. With about 12,500 employees in more than 110 companies world-wide, Heraeus is in a leading position on its global sales markets.

Heraeus Hong Kong is one of the core drivers of the Heraeus Group of companies in Asia, and represents the following business activities:

- Trading Division
- Chemicals Division - Recycling
- Chemicals Division - Chemical Products
- Functional Materials Division - Special Materials Technology
- Electronic Materials Division - Precious Colours
- Electronic Materials Division - Circuits & Components
- Electronic Materials Division - Display & Semiconductor

### 領先全球

總部位於德國哈瑙市的賀利氏貴金屬和科技集團公司是一家擁有160多年傳統的家族企業，業務遍及全球。我們為客戶提供卓越高效的解決方案，不斷提升客戶競爭力。貴金屬、材料科技、傳感器、生物材料和醫用產品、石英玻璃以及特殊光源是我們的核心理業務。2013年，賀利氏取得了36億歐元的產品收入以及135億歐元的貴金屬交易收入。賀利氏目前擁有約12500名員工、逾110家子公司，在全球市場佔據領導地位。

香港賀利氏是賀利氏集團在亞洲的核心動力之一，業務範圍包括：

- 貴金屬貿易部
- 化合物部 - 貴金屬回收
- 化合物部 - 貴金屬化工產品
- 功能材料部 - 特種材料技術
- 電子材料部 - 貴重顏料
- 電子材料部 - 電路及元件材料
- 電子材料部 - 顯示器及半導體材料



Special Materials Technology 特種材料技術



Precious Colours 貴重顏料



Circuits & Components 電路及元件材料

Display & Semiconductor 顯示器及半導體材料

# A History of Quality

## 品質的悠久歷史



### Quality Accreditations

Over the years, Heraeus has earned a reputation for providing high quality products and customized technical support to our clients. Heraeus Limited was first awarded the ISO9002 certificate in 1996, and further upgraded its quality management system to ISO9001:2000 in 2000. In 2002, we were awarded the QS9000:1998 certificate for our Business Unit Chemical Products. Our Laboratory also is accredited under ISO/IEC 17025:2005 of the Hong Kong Laboratory Accreditation Scheme (HOKLAS) operated by Hong Kong Accreditation Service (HKAS) since 2012.

The reason for our reputation for quality is simple – we control all aspects of the development process, including design, in-house production and product testing. Underscoring our commitment to providing quality products and services that surpass customers' expectation, we have been accredited to the ISO9001:2008 standard, covering all of our Business Units with production including Chemical Products, Recycling and Special Materials Technology.

### Industry Recognition

Heraeus plays a pivotal role in the precious metals market in S.E. Asia. We are a bullion group member of the accredited refineries of the Chinese Gold and Silver Exchange Society (CGSE). We produce 99% fineness 5-tael gold bars and 99.99% 1-kg gold bars for delivery on the Exchange, and in recognition of our market leadership, we were successfully listed on the London Bullion Market Association's (LBMA) Good Delivery List for Gold in 2006 and for Silver in 2010; and on the London Platinum and Palladium Market's (LPPM) Good Delivery List for Platinum in 2008 and for Palladium in 2011. Even now, we are the only Chinese refiner to be accepted onto both LBMA's Good Delivery List for Gold and Silver and LPPM's Good Delivery List for Platinum and Palladium in China.

As a responsible, family-owned company, Heraeus is a refiner of conflict-free gold bullions of the London Bullion Market Association (LBMA). Heraeus passed the Responsible Gold Audit successfully. We are committed to abstain from sourcing gold in regions where there are armed conflicts or serious violations of human rights.

### 品質認證

多年來，賀利氏為客戶提供優質的產品和度身定造的技術支援方案，而獲得良好的聲譽。賀利氏有限公司早在1996年首次獲得ISO9002國際品質認證，並在2000年進一步提升質量管理體系達到符合ISO9001:2000標準的要求。在2002年，我們的化工產品業務部更獲得了QS9000：1998證書。

在2012年，我們的實驗室更成功取得根據由香港認可處(HKAS)管理的香港實驗室認可計劃(HOKLAS)根據ISO/IEC 17025:2005國際標準的認證。

我們在質量上贏得信譽的原因很簡單，這全賴我們在產品開發過程上各方面都得到全面的控制；包括設計、內部生產和產品檢驗。為了實現致力於提供優質產品和超越客戶期望的服務承諾，我們的質量管理體系已經更新至最新的ISO9001:2008標準，涵蓋了我們所有的業務單位與化工產品的生產，回收和特種材料技術的業務。



### 業界認可

賀利氏在東南亞的貴金屬市場起了舉足輕重的作用。我們是香港金銀業貿易場(CGSE)的標準金條集團成員之一。同時也是生產九九金(純度99%)的五兩金塊和九九九九金(純度99.99%)的公斤條的認可供應商。作為市場的領導者，我們分別於2006年及2010年成功被列入倫敦金銀市場協會(LBMA)的金及銀合格交割會員名單上；並分別在2008年及2011年成為倫敦鉑金和鈀金市場(LPPM)的鉑金及鈀金合格交割會員。至目前為止，我們是唯一同時被列入倫敦金銀市場協會的金和銀及倫敦鉑鈀市場的鉑金及鈀金合格交割會員名單上的中國精煉商。

作為一個負責任的家族企業，賀利氏是倫敦金銀市場協會(LBMA)認可之無衝突黃金精煉商。賀利氏成功通過了黃金產品的規範審查。我們致力於禁止從有武裝衝突或嚴重侵犯人權的地區採購所有黃金。



## Analytical Services

### 化學分析服務



Heraeus' analytical department provides one stop analytical support to all businesses of HLH. Since over 40 years, we have been dedicated to consistently meeting the needs of our productions by providing flexible services with the highest level of integrity, reliability and efficiency. We adopt reliable traditional and state of the art analytical methods such as fire assay, wet chemical analysis and spectroscopic analysis, all traceable to the latest international standards, such as in BS, ASTM, ISO and EN.

Our highly-qualified team of experts utilizes the latest technology and the sophisticated equipment, such as auto-titrators, atomic absorption spectrophotometers, X-ray fluorescence spectrometer, inductively-coupled plasma atomic emission spectrophotometers, and others. We provide a quick, value-added approach to technical service and support. To ensure each test is fully standardized, we have developed a set of standard operating procedures to ensure tests are performed according to clear and concise written instructions. We strive to upgrade the standard of testing and management of our laboratory. In 2012, our laboratory has been accredited under ISO/IEC 17025:2005 of the Hong Kong Laboratory Accreditation Scheme (HOKLAS) operated by Hong Kong Accreditation Service (HKAS).

賀利氏的化驗分析部門為所有業務提供一站式的分析支援服務。在過去40年裡，我們一直致力於透過提高靈活服務的完整性、可靠性和效率的水平，以不斷滿足我們生產上的需要。我們採用可靠的傳統和先進的分析方法，例如火試金法、濕法化學分析和光譜分析。所有方法都可以追溯到最新的國際標準，如英國BS標準、美國ASTM標準、ISO標準、和歐盟EN標準。

我們高質素的專家團隊利用最新的技術和精良的儀器，如自動滴定儀、原子吸收光譜儀、X射線熒光光譜儀、電感耦合等離子體原子發射光譜儀等，以確保能夠為公司和客戶提供快速及增值的技術支援服務。為確保每一項測試完全標準化，我們已經制定了一套標準化的作業程序，以確保每項測試是按照清晰和簡潔的書面指示來完成。我們致力為了提升實驗室的檢驗和管理水平。在2012年，我們的實驗室已獲得由香港認可處(HKAS)管理的香港實驗所認可計劃(HOKLAS)根據ISO/IEC 17025:2005國際標準的認證。



Trading  
貴金屬貿易





# Heraeus Metals Hong Kong Limited 賀利氏金屬香港有限公司

## Global Precious Metals Trading

### 環球貴金屬貿易



Precious Metals Trading is one of Heraeus' core fields of business in Hong Kong. We are one of the major traders in the physical markets of gold, silver, platinum, palladium, rhodium, iridium and ruthenium, both in the form of metals, and as products.

With our unique combination of industrial and financial market know-how, every member of our team is dedicated to understanding the needs of our clients, and delivering the right solutions. Whether it's developing a demanding products system solution or precious metal management, our expertise is up to the task.

Heraeus is a truly global player, with other trading centers in Hanau, New York and Shanghai. With our strong international network, we offer the ability to trade all precious metals 24 hours a day. We are also closely connected to major market participants, such as mining firms, jewelry manufacturers, industrial users, traders, financial institutions and investors, giving us an unprecedented advantage in the marketplace.

#### Range of services:

- Sales and purchases of physical precious metals
- Purchase and sales via weight accounts
- Precious metal financing
- Forward transactions
- Options
- Limit orders
- Worldwide availability of precious metal and acceptance through in-house infrastructure

貴金屬貿易部是香港賀利氏的核心業務之一。我們是黃金、白銀、鉑金、鈀金、銻、鈦和鈳(既在金屬原材料的形式,也用作產品)現貨市場的主要交易商。

通過運用財經市場和融匯工業的兩面知識,我們專業團隊的每一個成員都致力於了解客戶的需求,探討得出準確的方案並提供貴金屬的管理服務,以助客戶達成目標。

賀利氏另有貴金屬貿易中心,分別位於德國的哈瑙市、美國的紐約市以及中國的上海市,是真正具有全球視野的環球企業。憑藉我們強大的國際網路,我們能為客戶提供24小時的貴金屬買賣服務。我們還跟相關業界,如:礦業公司、珠寶製造商、工業用戶、貿易商、金融機構和投資者有著緊密的聯繫,這為我們創造了絕對的市場優勢。

#### 服務範圍:

- 貴金屬實貨買賣
- 通過重量賬戶採購和銷售貴金屬
- 貴金屬融資
- 期貨買賣
- 期權交易
- 限價指令
- 全球貴金屬的內部資源調配





Recycling  
貴金屬回收





# Recycling 貴金屬回收

## Precious Metals Refining

### 貴金屬精煉

Heraeus' Business Unit Recycling in Hong Kong is a major player serving the Asia Pacific market, and takes full advantage of the territory's unique position as a free port, established logistics hub and close proximity to Asian countries. It is fully equipped to efficiently extract precious metals from almost any grade of concentrates, alloys, residues, scraps and sweeps containing gold, silver, platinum and palladium. By using state-of-the-art techniques and continuously investing in new technology, we offer high yields and short processing times. The key markets that we serve are the jewelry, electronics, semiconductor, mining and surface finishing industries.

We are also a fully licensed chemical waste collector and local leader in precious metals recycling. With an array of modern analytical instruments and techniques (such as fire assay, gravimetric analysis, titrimetric analysis, AAS, ICP-OES, etc.), we can accurately determine a material's exact precious metal content. By using a variety of advanced treatment processes, we can recover precious metals in a way that is not only highly efficient, but also clean and environmentally friendly. All of our processes meet the stringent environmental regulatory requirements of Hong Kong.

As always, quality comes first. That is why our Business Unit Recycling in Hong Kong holds a number of important accreditations:

- London Bullion Market Association (LBMA) Acceptable Refiners of Gold and Silver
- London Platinum & Palladium Market Association (LPPM) Acceptable Refiners of Platinum and Palladium
- Dubai Metal & Commodities Centre (DMCC) Approved Refiner of Gold
- China Gold & Silver Exchange Society (CGSE) Approved Refiner of Gold

Heraeus is a major provider of refining services around the world, with sites in Germany, China, India, South Africa, and the USA. At any of these sites, we have the capacity to efficiently refine materials containing gold, silver, platinum, palladium, rhodium, ruthenium, iridium, osmium and rhenium.

賀利氏的回收業務在香港的地位舉足輕重。主要為亞太市場提供服務，充分利用香港自由港口的獨特地位建立物流樞紐以緊密聯繫亞洲國家。我們完全有能力並可有效地從任何級別的含有黃金、白銀、鉑金和鈀金的精礦、合金、殘留物、廢料及廢屑中提取貴金屬。通過使用最先進的提煉設施，不斷進行新技術的投資，達至產量高而處理時間短的效果。我們所服務的主要市場包括珠寶、電子、半導體、採礦和表面加工行業。

我們領有化學廢物收集者牌照，也是貴金屬回收業務的領導者。通過現代分析儀器和技術工藝(如：火試金法、重量分析法、滴定分析法、原子吸收光譜分析法、電感耦合等離子體發射光譜分析法等)，我們可以準確地得到材料中精確的貴金屬含量。通過使用各種先進處理過程以不僅高效而且清潔和環保的方式回收貴金屬。我們的全部流程都符合香港嚴格的环境監管要求。

一如既往，品質至上。這就是我們的回收業務能夠取得許多重要質量及安全認證的原因：

- 倫敦金銀市場協會 (LBMA) 認可的黃金及白銀精煉商
- 倫敦鉑金和鈀金市場 (LPPM) 認可的鉑金和鈀金精煉商
- 迪拜多種商品中心認可的黃金精煉商 (DMCC)
- 香港金銀業貿易場認可的黃金精煉商 (CGSE)

我們也是世界上精煉服務的主要供應商，在德國、中國、印度、南非和美國都設有回收廠房。我們任何一個廠房都能有效地回收及精煉材料，包括黃金、白銀、鉑金、鈀金、銻、鈦、銲和銱。





Chemical Products  
貴金屬化工產品





## Chemical Products 貴金屬化工產品

### Precious Metal Compounds and Homogeneous Catalysts

### 貴金屬化合物及相催化劑

Our Business Unit Chemical Products is a highly reputable producer of precious metal products in Hong Kong, supplying the electronics, jewelry, watch and industrial plating industries in the regional and global markets. The production facilities of the Chemical Products in Hong Kong specialize in a broad range of electroplating and electroforming chemical products such as potassium gold cyanide, potassium silver cyanide, palladium salts, rhodium solutions and other precious metal compounds. Complementing our products and services to the electrode position industry, we are also a widely trusted and high quality supplier of silver granules and silver anodes.

The Business Unit Chemical Products, in conjunction with the Business Unit Recycling of Heraeus Limited, provides a complete one-stop-shop service solution to end users, covering both precious metal compounds and the subsequent refining of the precious metals.

In addition to locally manufactured products, we also supply a comprehensive range of specialty chemicals produced by sister companies in the Heraeus Group. These include organometallic compounds, homogeneous catalysts and other precious metal products that are essential technological elements of various industries such as the chemical, petrochemical, silicone, automotive, pharmaceutical, turbine engine and photovoltaic industries.

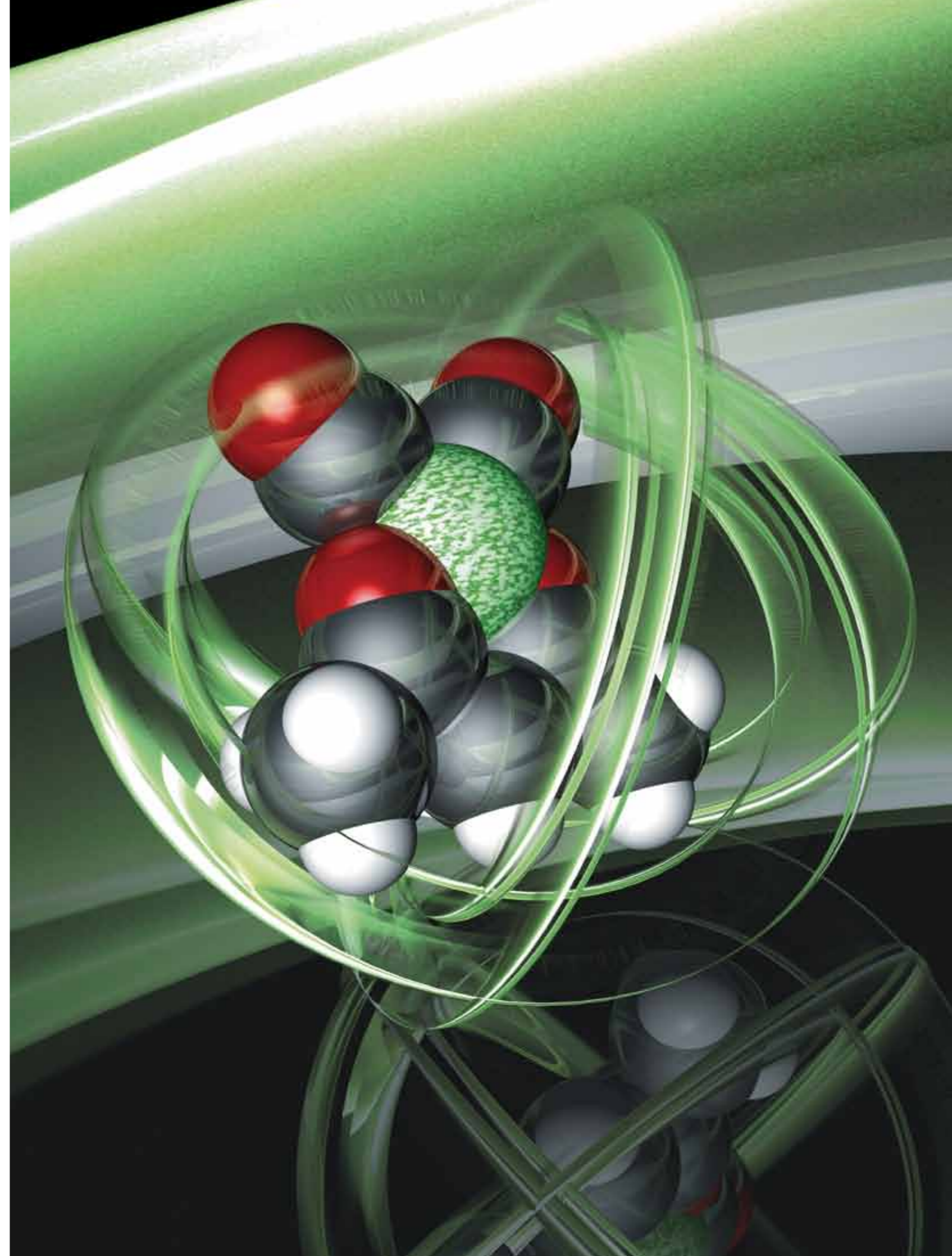
Globally, Heraeus is a leading producer of precious metal chemical products with manufacturing facilities in Germany, China, Hong Kong, USA, Ireland, South Africa and India. Over the years, we have been working closely and consistently with leading global companies in various industries to develop and supply technologically innovative solutions to our customers.

我們的貴金屬化工產品業務是香港貴金屬產品享負盛名的製造商，供應範疇涵蓋了全球的電子、珠寶、鐘錶和工業電鍍行業市場。我們備有專業生產設施，製造多種電鍍和電鍍工業化工產品，如：金鹽、銀鹽、鈀鹽、銻電鍍液和其他貴金屬化合物。我們所生產用於貴金屬電鍍業的高品質的銀粒和銀陽極更是受到業界廣泛認同。

配合賀利氏的回收業務，我們為終端用戶提供一站式從貴金屬化合物供應到貴金屬產品回收的完整服務解決方案。

除了本地製造的產品，我們還提供其他賀利氏集團公司生產的特殊化學品，包括有機金屬化合物、均相催化劑和其他貴金屬產品，應用於化工、石油化工、有機硅、汽車、製藥、渦輪發動機和光伏產業等行業作專門用途。

就全球而言，我們是一個貴金屬化工產品的主要生產企業，在德國、中國、香港、美國、愛爾蘭、南非和印度都設有生產廠房。多年來，我們一直與各行業領先的全球性公司緊密合作，從而為我們的客戶提供技術開發和創新的解決方案。





Special Materials Technology  
特種材料技術





## Special Materials Technology 特種材料技術

### Master Alloy Products for Jewelry Applications

### 珠寶應用的補口產品

For over 13 years, Heraeus Limited in Hong Kong has been faithfully serving the jewelry industry. From gold master alloys and sterling silver alloys, to solders and a range of semi-finished jewelry, we stand for products of the highest quality. We also supplies a wide selection of alloys for watch and gift manufacturers. Today, Heraeus is one of the top alloy product suppliers in the world.

Heraeus' Functional Materials Division combines state-of-the-art manufacturing processes with an advanced, fully equipped analytical laboratory and stringent quality control procedures that consistently guarantee the highest standards of product quality. With a wealth of experience, we fully understand the needs of the jewelry industry, with a wide selection of alloys in a variety of colors and physical properties available for all karatages and applications. And with the ability to cater to custom product specifications, we also provide an unparalleled degree of flexibility.

As always, technological innovation is what sets Heraeus and its semifinished jewelry apart. With a well-equipped research and development laboratory, we can develop the best, most advanced, and most user-friendly products for the industry. As an added benefit, we can offer failure-analysis for our customers to troubleshoot their production systems. By working closely with clients, we can offer solutions that get to the root of the issue.

在過去的13年，香港賀利氏有限公司忠實地服務於珠寶業。從黃金合金、銀合金到焊料和一系列的半製成品首飾，我們都追求最高質量的產品。我們對鐘錶和禮品廠商還提供廣泛的合金選擇。如今，賀利氏是世界上最大的合金產品供應商之一。

賀利氏的功能材料業務結合了最先進的製造工藝、設備精良的分析實驗室和嚴格的品質控制程序，不斷地為最高標準的產品質量提供保證。憑藉豐富的經驗，我們完全了解珠寶行業的需要，可提供不同顏色和特性的各種補口產品以供選擇以滿足所有純度需求和應用。我們還有能力提供無與倫比的靈活性以滿足客戶對產品規格的要求。

不斷發掘創新的技術是賀利氏公司及其首飾材料業務的顯著特點。我們具備精良的研究和開發實驗室以研發最好、最先進及最符合用戶需要的工業產品。作為一個額外的優勢，我們還可以為客戶提供失效分析以解決他們生產系統上的問題。通過與客戶的緊密合作，我們可以提供問題根源的解決方案。





Precious Colours  
貴重顔料





## Precious Colours 貴重顏料

Products for the Ceramic and Glass Industry

陶瓷與玻璃工業產品



The Heraeus' Business Unit Precious Colours in Hong Kong is the key supplier of materials for the decoration of ceramics and glass for the entire region. Our precious metal preparations, lustres, organic colours and other auxiliary materials are all of the highest quality, meeting the requirements of mechanical and chemical resistance.

Our Precious Colour products are primarily used for application as surface decoration for ceramic tableware, arts and crafts ware, glassware, tiles and sanitary wares. They are designed to be applied through a variety of techniques, including brush application, direct and indirect screen printing (decals), machine lining, pad printing and spraying.

Around the world, our Business Unit Precious Colours is also one of the leading manufacturers of decoration materials for glass and ceramics. With representatives in over 80 countries and production sites in Germany, China, India and Turkey, we are perfectly positioned to serve our customers around the globe.

香港賀利氏的貴重顏料業務是整個區域最主要的陶瓷與玻璃裝飾材料供應商。我們所供應的產品包括用於裝飾陶瓷玻璃的金水金膏、電光水電光膏、有機顏料和其他輔助材料，其質素均為最優等，足以達到耐用防腐蝕的材料要求。

我們的貴重顏料產品主要應用於餐具日用瓷、藝術瓷、玻璃器皿、牆地磚和衛生潔具的表面裝飾上，並可採用各種著色技術，如：手繪、絲網直接印刷及花紙絲網印刷、機器描線、移印和噴塗。

我們的貴重顏料業務在全球玻璃與陶瓷裝飾市場裡，扮演著舉足輕重的角色。憑藉遍佈全球逾80個國家的營運代理以及設於德國、中國、印度及土耳其的生產廠房，我們竭盡所能為全球客戶服務。





Circuits & Components

電路及元件材料

Display & Semiconductor

顯示器及半導體材料





## Circuits & Components 電路及元件材料

### Thick Film Pastes and Clevios™ Conductive Polymer Capacitor Materials 厚膜電子漿料和Clevios™ 導電聚合物



Producers of electronic circuits and electronic components benefit from excellent material properties which can be achieved with thick film and Clevios™ conductive polymers.

As a market leader in the production of thick film pastes and passive components metallizations, Heraeus Circuits & Components offers a broad range of resistor, dielectric, resin and conductor pastes, capacitor terminations and inner electrodes, as well as precious metal powders and LTCC systems. The different types of pastes – applicable to various substrate materials like alumina, aluminum and steel – are used e.g. for the manufacturing of electronic circuits, passive components, sensors, fuel senders, fuel cells and transmission controls. Furthermore thick printing copper conductor pastes serve amongst others the power electronic industry.

Clevios™ conductive polymers are essential to achieve low ESR, low leakage current, good reliability and long lifetime in electrolytic capacitors. Because of its high conductivity and outstanding temperature stability, poly-3,4-ethylenedioxythiophene (PEDOT), is widely used in anodes in the capacitor industry. Clevios™ materials are used to manufacture traditional polymer type tantalum and aluminum capacitors, as well as new cutting edge high voltage devices. Clevios™ products offered are ready-to-use Clevios™ K types and, for in-situ polymerization, Clevios™ M monomer along with Clevios™ C oxidizer.

電子電路和電子元件的生產商，通過採用厚膜電子漿料和Clevios™ 導電聚合物，從而能夠得益於它們的優異材料性能。

作為厚膜電子漿料及無源元件金屬化生產領域的市場領先者，賀利氏電路及元件材料業務提供了範圍廣泛的產品，包括電阻、絕緣、樹脂及導體漿料、電容器端電極及內電極，還有貴金屬粉及低溫共燒陶瓷材料。不同系列的漿料塗覆在各種基材例如氧化鋁、鋁基板及鋼基板上，可應用於集成電路、無源元件、傳感器、燃油傳感器、燃料電池及傳輸控制器。另外厚膜印刷銅膏除了這些應用外還可用在電力電子工業中。

在電解電容的生產中，要達到低ESR(等效串聯電阻)、低漏電流、好的信賴性、及較長壽命等特性，Clevios™ 導電聚合物是必須採用的材料。由於聚-(3,4-乙稀二氧噻吩)(PEDOT)，具有高導電性和出色的高低溫穩定性，從而被廣泛應用於電容器的陽極結構中。Clevios™ 材料不僅被用來製造傳統型的聚合物鉭電容和鋁電容，還能製造應用於新的尖端高電壓設備中的聚合物電容器。在Clevios™ 產品系列中，賀利氏提供即用型Clevios™ K分散體聚合物和原位化學聚合所需的Clevios™ M單體材料以及Clevios™ C氧化劑材料。

## Display & Semiconductor 顯示器及半導體材料

### Clevios™ Conductive Polymers and Heraeus Daychem advanced chemicals Clevios™ 導電聚合物和賀利氏Daychem尖端化學材料



From advanced flexible materials for displays to class leading speciality chemicals, the Display and Semiconductor business of Heraeus Electronics Materials Division provides cutting edge materials for electronic applications.

Heraeus Electronic Materials Division, Display Business Unit is the leading worldwide supplier of Inherently Conductive Polymers (ICP) marketed under the brand name Clevios™ \*

The conductive polymers product portfolio comprises of:

- Clevios™ P Types: a broad range of PEDOT:PSS materials and formulations which can be tailor made to match a particular application
- a family of polymerization agents and auxiliary materials, including etchants and hardcoats

Heraeus serves a broad range of industries, including electronics, solar, optics, OLED, display, and touch technologies. Heraeus provides on a global basis know-how to enable the development of cutting edge functional materials for antistatic coatings, capacitive touch applications and sensors, HIL materials and electrodes for OLED/organic solar cell and printed electronics technologies.

The combination of conductivity, transparency, and flexibility opens the way to a whole range of new cutting edge solutions.

Heraeus Daychem produces a range of advanced chemicals and photoactive materials primarily for the semiconductor and display industry. Daychem combines breakthrough innovation, precise chemical processing and rapid manufacturing turnaround to deliver results for clients in the semiconductor, display, electronic, and aerospace industry. The product range includes speciality chemicals, electronic grade photo acid generators (PAGs), along with ethoxides for advanced optical and electronic applications.

\* Clevios™ for Capacitors is marketed by BU Circuits and Components.

從應用於顯示器上的先進可繞性材料以至頂級的特殊化學品，賀利氏電子材料部的顯示器及半導體材料業務部為電子應用領域提供了尖端的材料。

賀利氏電子材料部，顯示器業務部的品牌產品Clevios™ \* 在全球本微型導電聚合物材料(ICP)中獨佔鰲頭。

導電聚合物產品系列包括：

- Clevios™ P系列：提供廣泛的一系列PEDOT:PSS材料和客制化的配方，以配合用戶個別的應用需要
- 聚合氧化劑系列產品和其他輔助材料，包括蝕刻劑和硬膜保護膠

賀利氏為電子、太陽能、光學、有機發光二極管OLED、顯示器和觸控技術行業提供了廣泛的服務。賀利氏通過採用全球範圍內的專有技術，使應用於防靜電塗料、電容式觸控應用、傳感器、電洞傳輸層HIL材料、有機發光二極管OLED / 有機太陽能電池中的電極以及印刷電子等尖端科技的功能材料得以發展。

結集高導電度、高透明和柔韌性為一體的綜合性能，為滿足全方位最尖端的解決方案開通了道路。

賀利氏Daychem生產一系列先進的化學和光敏材料，主要應用於半導體和顯示器行業中。Daychem結合了突破性的創新、精密的化學工藝和快速的製造轉型，為半導體、顯示器、電子和航天工業的客戶創造業績。其產品範圍包括特種化學品、電子級光酸產生劑(PAGs)，連同乙醇鹽材料可應用在先進的光學和電子領域中。

\* Clevios™ 的電容器材料業務，由賀利氏電路及元件業務部提供



## Information

### 查詢

We invite you to visit our websites for access the latest information regarding Heraeus' products, services and technologies in both Hong Kong and worldwide.

有關賀利氏提供的產品、服務及科技的最新資訊，歡迎瀏覽香港及世界各地的賀利氏網頁。

Hong Kong [www.heraeus.com.hk](http://www.heraeus.com.hk)

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[www.heraeus-jewelleryproducts.com](http://www.heraeus-jewelleryproducts.com)  
[www.heraeus-preciouscolours.com](http://www.heraeus-preciouscolours.com)  
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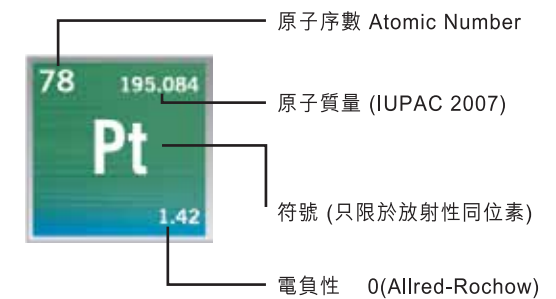




# Periodic Table of the Elements

## 化學元素周期表

	I A 1		II A 2											III A 13	IV A 14	V A 15	VI A 16	VII A 17	VIII A 18	
1	1 1.00794 <b>H</b> 2.20																		2 4.002602 <b>He</b> 5.5	<b>K</b> n = 1
2	3 6.941 <b>Li</b> 0.97	4 9.012182 <b>Be</b> 1.47												5 10.811 <b>B</b> 2.01	6 12.0197 <b>C</b> 2.50	7 14.0067 <b>N</b> 3.07	8 15.9994 <b>O</b> 3.50	9 18.9984032 <b>F</b> 4.10	10 20.1797 <b>Ne</b> 4.8	<b>L</b> n = 2
3	11 22.98976928 <b>Na</b> 1.01	12 24.3050 <b>Mg</b> 1.23	III B 3	IV B 4	V B 5	VI B 6	VII B 7	8	VIII 9	10	IB 11	II B 12	13 26.9815386 <b>Al</b> 1.47	14 28.0855 <b>Si</b> 1.74	15 30.973762 <b>P</b> 2.06	16 32.065 <b>S</b> 2.44	17 35.453 <b>Cl</b> 2.83	18 39.948 <b>Ar</b> 3.2	<b>M</b> n = 3	
4	19 39.0983 <b>K</b> 0.91	20 40.078 <b>Ca</b> 1.04	21 44.955912 <b>Sc</b> 1.20	22 47.867 <b>Ti</b> 1.32	23 50.9415 <b>V</b> 1.45	24 51.9961 <b>Cr</b> 1.56	25 54.938045 <b>Mn</b> 1.60	26 55.845 <b>Fe</b> 1.64	27 58.933195 <b>Co</b> 1.70	28 58.6934 <b>Ni</b> 1.75	29 63.546 <b>Cu</b> 1.75	30 65.38 <b>Zn</b> 1.66	31 69.723 <b>Ga</b> 1.82	32 72.64 <b>Ge</b> 2.02	33 74.92160 <b>As</b> 2.20	34 78.96 <b>Se</b> 2.48	35 79.904 <b>Br</b> 2.74	36 83.798 <b>Kr</b> 2.9	<b>N</b> n = 4	
5	37 85.4678 <b>Rb</b> 0.89	38 87.62 <b>Sr</b> 0.99	39 88.90585 <b>Y</b> 1.11	40 91.224 <b>Zr</b> 1.22	41 92.90638 <b>Nb</b> 1.23	42 95.96 <b>Mo</b> 1.30	43 [98] <b>Tc*</b> 1.36	44 101.07 <b>Ru</b> 1.42	45 102.90550 <b>Rh</b> 1.45	46 106.42 <b>Pd</b> 1.42	47 107.868 <b>Ag</b> 1.42	48 112.411 <b>Cd</b> 1.46	49 114.818 <b>In</b> 1.49	50 118.710 <b>Sn</b> 1.72	51 121.760 <b>Sb</b> 1.82	52 127.60 <b>Te</b> 2.01	53 126.90447 <b>I</b> 2.21	54 131.293 <b>Xe</b> 2.4	<b>O</b> n = 5	
6	55 132.9054519 <b>Cs</b> 0.86	56 137.327 <b>Ba</b> 0.97	57 138.90547 <b>La</b> 1.08	72 178.49 <b>Hf</b> 1.23	73 180.94788 <b>Ta</b> 1.33	74 183.84 <b>W</b> 1.40	75 186.207 <b>Re</b> 1.46	76 190.23 <b>Os</b> 1.52	77 192.217 <b>Ir</b> 1.55	78 195.084 <b>Pt</b> 1.42	79 196.96659 <b>Au</b> 1.42	80 200.59 <b>Hg</b> 1.44	81 204.3833 <b>Tl</b> 1.44	82 207.2 <b>Pb</b> 1.55	83 208.9804 <b>Bi</b> 1.67	84 [209] <b>Po*</b> 1.76	85 [210] <b>At*</b> 1.96	86 [222] <b>Rn*</b> 2.1	<b>P</b> n = 6	
7	87 [223] <b>Fr*</b> 0.86	88 [226] <b>Ra*</b> 0.97	89 [227] <b>Ac*</b> 1.00	104 [265] <b>Rf*</b>	105 [268] <b>Db*</b>	106 [271] <b>Sg*</b>	107 [272] <b>Bh*</b>	108 [270] <b>Hs*</b>	109 [276] <b>Mt*</b>	110 [281] <b>Ds*</b>	111 [280] <b>Rg*</b>	112 [285] <b>Cn*</b>	113 [284] <b>Uut*</b>	114 [289] <b>Uup*</b>	115 [288] <b>Uup*</b>	116 [293] <b>Uuh*</b>		118 [294] <b>Uuo*</b>	<b>Q</b> n = 7	
			6	58 140.116 <b>Ce</b> 1.08	59 140.90765 <b>Pr</b> 1.07	60 144.242 <b>Nd</b> 1.07	61 [145] <b>Pm*</b> 1.07	62 150.36 <b>Sm</b> 1.07	63 151.964 <b>Eu</b> 1.10	64 157.25 <b>Gd</b> 1.11	65 158.92535 <b>Tb</b> 1.10	66 162.50 <b>Dy</b> 1.10	67 164.93032 <b>Ho</b> 1.10	68 167.259 <b>Er</b> 1.11	69 168.93421 <b>Tm</b> 1.11	70 173.054 <b>Yb</b> 1.06	71 174.9668 <b>Lu</b> 1.14			
			7	90 232.03806 <b>Th*</b> 1.11	91 231.03588 <b>Pa*</b> 1.14	92 238.02891 <b>U*</b> 1.22	93 [237] <b>Np*</b> 1.22	94 [244] <b>Pu*</b> 1.22	95 [243] <b>Am*</b> 1.2	96 [247] <b>Cm*</b> 1.2	97 [247] <b>Bk*</b> 1.2	98 [251] <b>Cf*</b> 1.2	99 [252] <b>Es*</b> 1.2	100 [257] <b>Fm*</b> 1.2	101 [258] <b>Md*</b> 1.2	102 [259] <b>No*</b> 1.2	103 [262] <b>Lr*</b> 1.2			





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