

JOINT MEDIA RELEASE

Heraeus Precious Metals and Sibanye-Stillwater to explore new applications with palladium for hydrogen

Hanau and Johannesburg, 15 February 2024 - Heraeus Precious Metals and Sibanye-Stillwater are partnering to explore new applications for platinum-group metals (PGM) in the hydrogen economy, specifically how existing or new applications could profit from the unique traits of palladium. The joint aim is to develop alternative markets for palladium and support the emerging hydrogen sector with technical innovations. The project will be equally funded by both parties.

Palladium has a very high selectivity for hydrogen and thus can be used in a broad range of applications. The increasing demand for the purification of hydrogen during blue hydrogen production is one possible example of a palladium-based application. Further examples include the cracking of hydrogen carriers and the semiconductor industry, where high-purity hydrogen is needed as a process gas.

As a market-leading player in technology development for PGMs and their recycling, Heraeus Precious Metals is contributing its technical expertise and experience in scaling up and optimizing catalytic processes. Sibanye-Stillwater, one of the world's largest producers of PGMs continues to seek innovative applications and develop new markets for PGMs. Previous joint projects have already shown impressive results, such as the recent [development of a stable ruthenium-based catalyst](#) for PEM (Proton Exchange Membrane) Water Electrolysis.

Balancing the PGM supply basket

Palladium is one of the major platinum-group metals and is a critical metal in the automotive sector, i.e. in catalytic converters for internal combustion engines. While palladium demand has been dominated by auto catalysts for the past few decades and remains critical to emissions control in both internal combustion and hybrid engines, the unique physical and chemical characteristics of the metal lends itself to significantly wider industrial applications. Over the longer term, demand for palladium in the automotive sector is expected to decrease, creating an opportunity to consider new applications for the metal that will not only benefit downstream industry users, but also ensure sustainable demand for the metal.

With their partnership, Heraeus Precious Metals and Sibanye-Stillwater aim to ensure a "sustainable PGM supply basket". Major ingredients of the mined "basket" for PGMs include palladium and platinum and critical raw materials, like iridium, ruthenium and rhodium. To ensure market demand for these critical raw materials can be met, requires sufficient demand for all metals to be sustained in the long term. While the emerging green hydrogen and fuel cell market offers high potential for increasing demand for platinum, significant opportunity exists for the partnership to develop and scale corresponding applications for palladium.

Dr. Philipp Walter, Head of Business Line Hydrogen Systems at Heraeus Precious Metals, emphasizes: "We are convinced that the emerging hydrogen economy involves many applications, which need precious metals. When moving technologies to scale, reliable process efficiency is the key. This is a home turf for precious metals. We are doing our part in the energy transition by bringing precious metal solutions to hydrogen technologies and enabling performance at scale."

Neal Froneman, Chief Executive Officer at Sibanye-Stillwater, echoed this sentiment and added: "We expect hybrids to become the dominant engine type underpinning demand for palladium in the medium term. Longer term and in response to changing demands, the PGM industry must innovate and stabilize the platinum group metals market. Together with Heraeus Precious Metals, we invest in new technologies that leverage the unique characteristics of PGM's in line with our Company Purpose of combatting climate change and fostering the sustainability of the industry."

Picture (Source Heraeus Precious Metals):



Caption: Palladium has a very high selectivity for hydrogen and thus can be used in a broad range of applications.

About Heraeus

The Heraeus Group is a broadly diversified and globally leading family-owned technology company, headquartered in Hanau, Germany. The company's roots go back to a family pharmacy started in 1660. Today, Heraeus bundles diverse activities in the Business Platforms Metals and Recycling, Healthcare, Semiconductor and Electronics as well as Industrials. Customers benefit from innovative technologies and solutions based on broad materials expertise and technological leadership.

In the 2022 financial year, the group generated revenues of €29.1 billion (US\$30.6 billion) with approximately 17,200 employees in 40 countries. Heraeus is one of the top 10 family-owned companies in Germany and holds a leading position in its global markets.

About Heraeus Precious Metals

Heraeus Precious Metals is globally leading in the precious metals industry. The company is part of the Heraeus Group and covers the value chain from trading to precious metals products to recycling. It has extensive expertise in all platinum group metals as well as gold and silver.

With about 3,000 employees at 15 sites worldwide, Heraeus Precious Metals offers a broad portfolio of products that are essential for many industries such as the automotive, chemicals, semiconductor, pharmaceutical, hydrogen and jewelry industry.

By 2025 Heraeus Precious Metals will be the first company in the industry that operates carbon neutral.

About Sibanye-Stillwater

Sibanye-Stillwater is a multinational mining and metals processing group with a diverse portfolio of operations, projects and investments across five continents. The Group is also one of the foremost global recyclers of PGM autocatalysts and has interests in leading mine tailings retreatment operations.

Sibanye-Stillwater has established itself as one of the world's largest primary producers of platinum, palladium, and rhodium and is a top tier gold producer. It also produces and refines iridium and ruthenium, nickel, chrome, copper and cobalt. The Group has recently begun to diversify its asset portfolio into battery metals mining and processing and increase its presence in the circular economy by growing its recycling and tailings reprocessing exposure globally. For more information refer to www.sibanyestillwater.com.

Media contact Heraeus Precious Metals

Mareike Fillsack
Heraeus Precious Metals
Phone +49 6181 35 5390
mareike.fillsack@heraeus.com

Media contact Sibanye-Stillwater

James Wellsted
Email: ir@sibanyestillwater.com
Executive Vice President: Investor Relations and Corporate Affairs
Tel: +27 (0) 83 453 4014