At the Cutting Edge of Innovation

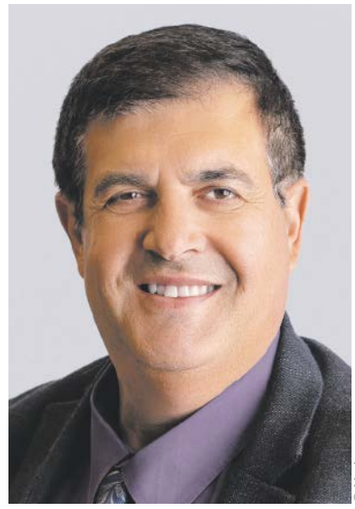
Leveraging Market Expertise to Deliver Success in Precious Metals Chemistry

The Belgian materials technology and recycling group Umicore is a specialist in the fields of material science, chemistry and metallurgy. The Precious Metals Chemistry (PMC) business unit is one of the world's most important suppliers of precious metal chemicals and catalysts for a wide range of industrial and commercial applications. CHEManager asked Phillip Chalabi, Umicore's director Strategic Projects and Innovation, about current trends in catalysis and the company's activities to accelerate the global transformation of mobility, respond to the growing need for advanced materials, and contribute to the pursuit of a global circular economy.

CHEManager: Mr. Chalabi, what are the most important (mega) trends in catalysis/catalyst technology these days?

Phillip Chalabi: While there are still significant efforts underway to develop improved catalysts for traditional known chemical transformations such as cross-coupling and enantio-selective reactions, much of the new focus is on sustainable chemistries that support the circular economy, ESG targets, and the energy transition. This includes catalysts required for hydrogen generation and transport as well as catalysts for CO_2 utilization. The future demands for high-performance and cost-effective catalysts will only increase.

How do you align Umicore PMC's strategy and activities along these trends?



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Phillip Chalabi, Director Strategic Projects and Innovation, Umicore

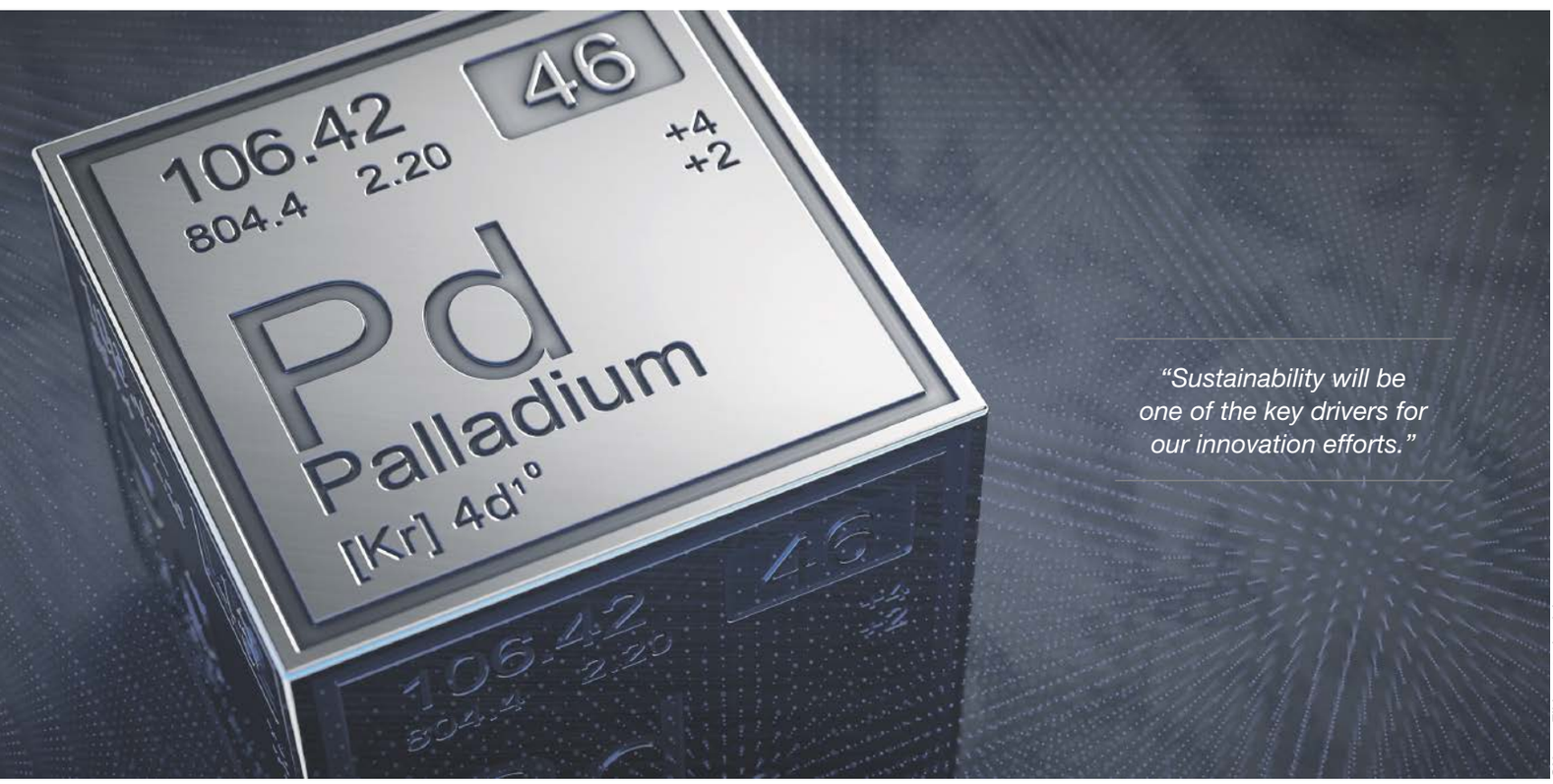
P. Chalabi: Umicore is working aggressively in many of these new areas. As the center of excellence for catalysis within Umicore, PMC has a key role in the development of the catalysts that will enable these new technologies to be enabled.

What are the drivers of innovation and progress in the markets in which PMC operates?

P. Chalabi: PMC has a dedicated team within the organization that I lead and is responsible for the identification of new markets, technologies, and products that will carry PMC into the future. We utilized a corporate foresights methodology to identify the key trends and factors that will impact our business. Sustainability will be one of the key drivers for our innovation efforts. My group works closely with R&D as well as the broader Umicore community to ensure that the programs we work on are successfully achieved.

How did your latest technology additions of the Grubbs and MeNAP catalysts, respectively, complement your tool box, and where are these technologies used?

P. Chalabi: The acquisition of the Grubbs catalyst portfolio from Materia in 2018 was a significant step forward for our homogeneous catalyst business.



"Sustainability will be one of the key drivers for our innovation efforts."

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Umicore is recognized worldwide as the leader in metathesis catalyst technology. We have the most comprehensive portfolio of Grubbs catalysts available on the market today. In 2024, we are launching a series of new homogeneous catalysts starting with our MeNAP cross-coupling product line. The standout feature of MeNAP lies in its ability to execute challenging cross-coupling reactions such as Suzuki-Miyaura couplings of arylchlorids and boronic acid derivatives forming tetra-ortho-substituted biaryls at room temperature with low catalyst loadings. Both Grubbs catalysts and the new MeNAP catalysts can be used in pharma, fine chemical, and specialty chemical applications.

> *"Umicore is one of the original companies in the precious metal catalyst world."*

Precious Metals Chemistry means that you are handling costly elements and materials. How important is recycling, what is your approach to close materials loops and how do you manage it?

P. Chalabi: Umicore is one of the original companies in the precious metal catalyst world and has adopted long-standing procedures for the recovery and refining of precious metal-containing materials and waste streams. We are the largest refiner of precious metals worldwide. Our full-loop concept means that we work with our customers every step of the way from precious metal acquisition through conversion to precious metal-containing catalysts and then support the return of the precious metal-containing waste streams to Umicore for processing and generation of precious metal ready for new production. This full-loop concept is currently utilized by many of our customers.

Umicore works closely with customers in the research, development, and commercial manufacturing of complex organometallic chemicals and catalysts. Can you give some examples of these cooperations?

P. Chalabi: We are a big believer that customer-driven innovation is a key to success. Many of our most important products of today started as early-stage requests from specific customers looking for a technology that was not commercially available. Our advanced technology team within our R&D organization works closely with the R&D groups of our customers to design new catalysts that will give our customers a strategic advantage for their new product. We welcome these opportunities!

Where do you have technical centers and how do they support joint development projects with customers?

P. Chalabi: Our main technical center is in Hanau, Germany, but we also have R&D support in North America. All of our joint customer projects are assigned a project team consisting of both technical experts and commercial representatives under the lead of a project team manager. This setup ensures that communication flows efficiently and customer milestones are achieved.

Umicore commits to open innovation and collaborates with research institutes, start-ups and universities worldwide. Can you give some examples of partners and successes?

P. Chalabi: We utilize an extensive range of partnerships worldwide including academic collaborations, governmental organizations, and industrial partners. These partnerships can either be the acquisition of new IP, participation in open-innovation programs or can be development collaborations that extend our internal R&D resources to accelerate product development. Each of these types of partnerships are critical to the success of a multi-national company such as Umicore.

Umicore wants to inspire young talent with the program 'Imagine what you could do'. What is this program about?

P. Chalabi: Umicore has been quite active in sponsoring students through our Young Talents program. There are both technical and business tracks that expose students to the inner-workings of a major company. Many of the interns end up working for Umicore in the future. Not only does the student get insight into how a company like Umicore works, but we get great value from their insights and excitement. It is truly a win-win!

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Life Sciences Industry Accelerates Growth

The top management of life sciences companies is very optimistic about 2024 and 2025, with over 80% of pharmaceutical, medical technology and biotechnology executives expecting profit growth for the current year and over 90% for the coming year. Around one in two companies expect profits to rise by more than 5% this year and 70% next year. These are the findings of the annual survey "Life Sciences Executives Flash Report" by consulting company Horváth (see also article on pp. 20-21).

For this study, Horváth surveyed executives from all over the world who work in companies in the life sciences industry in the first quarter of 2024.

The reason for the positive mood: those responsible firmly believe that volume growth (over 75%), new product launches (over 80%) and cost efficiency measures are having an impact. In particular, they are focusing on a leaner administrative structure. Almost 50% of respondents see this as an opportunity to increase profits, the report states. Another popular measure is the renegotiation of supplier contracts. Around 40% see an opportunity here. Further efficiency potential lies in the widespread energy-saving programs. Almost 60% of those surveyed are already implementing these; a further 25% have already decided on corresponding measures.

According to the results of the survey, managers currently see regulation as the biggest challenge for their companies. 90% expect the authorities to intervene more in the market. This is 25 percentage points more than in the previous year. A further 80% believe that the introduction of digital innovations will revolutionize the market and business models. In addition, a similar number of respondents expect a strong impact from reduced healthcare budgets due to public austerity measures. Two out of three companies are preparing for further challenges in their global supply chains.

■ www.horvath-partners.com