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Contacts:

Ms. Jewelle Yamada

Phone: 212-207-0574

Mobile: 646-584-9556

Email: jewelle-k.yamada@sumitomocorp.com

Ms. Amy Babcock

Phone: 212-207-0567

Email: amy.babcock@sumitomocorp.com

Syzygy Enters Joint Development Agreement with LOTTE Chemical, LOTTE Fine Chemical and Sumitomo Corporation of Americas to Deliver Fully Electric Chemical Reactor Technology in the Race to Produce Clean Hydrogen

The adoption of this innovative technology positions LOTTE and Sumitomo as leaders in the hydrogen industry and advances goals to decarbonize Korea



New York, NY – August 24, 2022 – Syzygy Plasmonics, LOTTE Chemical and LOTTE Fine Chemical (LOTTE Chemical HQ), and Sumitomo Corporation of Americas (SCOA) announced a joint development agreement today to test a fully electric chemical reactor for clean hydrogen production. The reactor will be installed and brought online in the second half of 2023 at LOTTE Chemical HQ facilities in Ulsan, South Korea. The agreement is a clear identifier of LOTTE Chemical HQ and SCOA as early adopters of disruptive technology and reinforces their position as leading the effort to decarbonize Korea.

With the announcement of their 2030 Vision in May 2022, LOTTE Chemical HQ defined clear pathways and directives for leading decarbonization efforts while simultaneously achieving record revenue growth. Among other climate-focused goals, the company is setting the stage to advance the hydrogen economy in Korea. Plans include importing green ammonia that can be readily transported and stored before it is converted into clean hydrogen with expectations of generating 1.2 million tons of hydrogen per year domestically by 2030.

The traditional thermal “cracking” of ammonia uses high heat and pressure to convert it to hydrogen gas. The heat required to drive this process is achieved by burning fossil fuels, making ammonia cracking extremely carbon intensive. Using fully electric reactors gives hydrogen producers a way to reduce or eliminate their reliance on combustion as the energy source for processing ammonia.

SCOA first invested in Syzygy in 2019 and since that time, the companies have worked together to deploy its cutting-edge technologies. A pioneer in industrial decarbonization, Syzygy has developed platform reactor technology that uses light from ultra-high-efficiency LEDs to power chemical reactions. By removing the need for heat from burning fuel, which is how traditional carbon intensive chemical reactors are powered. Syzygy’s process offers a new way to electrify chemical manufacturing and eliminate emissions associated with powering chemical processes. The company has demonstrated through extensive lab and pre-commercial-scale testing its ability to efficiently split ammonia and produce hydrogen gas without combustion. Development results show the technology will not only reduce the carbon footprint of hydrogen production, but it will also help reduce costs. The LOTTE Chemical HQ installation marks the first time the technology will be deployed at a commercial scale.

“Simply improving existing tech isn’t enough to reach the world’s decarbonization goals. Stopping climate change will require industries to reimagine what is possible,” said Syzygy CEO Trevor Best. “Our technology expands the accepted paradigms of chemical engineering. We have demonstrated the ability to replace heat from combustion with renewable electricity in the manufacture of foundational chemicals like hydrogen. Today LOTTE Chemical HQ and SCOA and Sumitomo Corporation Korea are taking a profound step forward, demonstrating through actions their commitment to help decarbonize Korea. Syzygy is honored to be a part of their forward-thinking efforts in fighting climate change.”

The three companies announced the joint development agreement at a ceremony at LOTTE World Tower in Seoul, Korea on August 24, 2022.

“Partnering with best-in-class companies like Syzygy and LOTTE Chemical HQ is one of the important steps we are taking to make good on our commitment to achieve carbon neutrality by 2050, and lead the decarbonization of society,” said Shinichi Hasegawa, General Manager of Energy Innovation Initiative of Americas at Sumitomo Corporation of Americas. “We are proud to engage in scaling up the groundbreaking technology Syzygy has developed, and we are confident its application with LOTTE Chemical HQ will yield successful results.”

About Syzygy Plasmonics

Syzygy Plasmonics is eliminating the need to burn fossil fuels in chemical manufacturing. Instead of heat from combustion, the company’s novel reactors use electricity to drive chemical reactions. Its platform technology reduces emissions in the production of chemicals, fuels, and fertilizers while also controlling costs. For more information, visit www.plasmonics.tech.

About LOTTE Chemical

LOTTE Chemical is Korea's leading chemical company, contributing to the healthy and rich life of humankind through creative challenges and innovation.

Our extensive range of products from polymer to megatrend product groups is widely used in household goods that we frequently encounter in our everyday lives, as well as cutting-edge new materials.

LOTTE Chemical is poised to take another leap to protect nature and make human life more abundant through the continuous development of products using eco-friendly technologies.

Based on ESG management, we will create a more convenient lifestyle for people and a better environment for nature, as we build a tomorrow that is more beneficial to both people and nature.

About LOTTE Fine Chemical

LOTTE Fine Chemical is a global specialty chemicals company.

Since its foundation in 1964, LOTTE Fine Chemical supply fine chemicals such as chlorine and ammonia relatives and cellulose ether to global markets

About Sumitomo Corporation of Americas

Established in 1952 and headquartered in New York City, Sumitomo Corporation of Americas (SCOA) has eight offices in major U.S. cities. SCOA is the largest subsidiary of Sumitomo Corporation, one of the world's leading traders of goods and services. As an integrated business enterprise, the firm has emerged as a major organizer of multinational projects, an expediter of ideas, an important international investor and financier, and a powerful force for distribution of products and global communications through a network of offices worldwide. Its core business units include Tubular Products, Environment and Infrastructure, Steel and Non Ferrous Metals, Transportation and Construction Systems, Chemicals and Electronics, Media and IOT Applications, Real Estate, Mineral Resources and Energy, and Food. For more information, visit www.sumitomocorp.com