

News Release

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Merck KGaA, Darmstadt, Germany, and Rigaku Form Partnership to Develop Novel Molecular Structure Analysis Technology

- **Merck KGaA, Darmstadt, Germany, and Rigaku are collaborating to develop commercially available lab solutions employing highly innovative crystalline sponge technology**
- **Merck KGaA, Darmstadt, Germany, will develop lab consumables to determine the absolute chemical structure of substances on sub-microgram scale**
- **Rigaku will continue to improve its X-ray systems to accommodate the lab consumables of Merck KGaA, Darmstadt, Germany, to provide turn-key solutions for customers**

Darmstadt, Germany, June 6, 2019 – Merck KGaA, Darmstadt, Germany, a leading science and technology company, and Rigaku Corp., Tokyo, Japan, a key player in scientific analytical instrumentation, have signed a joint development agreement to develop lab consumables based on highly innovative crystalline sponge technology, which determines the absolute chemical structure of organic molecules and enables X-ray crystallography without crystallization of the analyte.

“We have licensed a new technology with the potential to help labs determine absolute chemical structure quickly, even for samples on a sub-microgram scale. Our innovation project is working on dedicated consumables that will simplify the technology to enable our customers to apply it,” said Isabel De Paoli, Chief Strategy Officer at Merck KGaA, Darmstadt, Germany. “With Rigaku, we have found an



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extremely competent partner to develop the best devices for the technology, and we are looking forward to working together on this project.”

Yoshiaki Watanabe, Senior Executive Vice President of Rigaku, said “Rigaku has been at the leading edge of technology in the high-end crystallography market for decades. This project will open new doors for scientists at all levels of expertise across a range of disciplines – in medicine, life science and the evolution of advanced materials.”

The innovative approach of crystalline sponge technology can be applied to extremely small amounts of a substance, volatiles and other non-crystallizable compounds. The project simplifies the complex technology and makes it available to chemical and life science laboratories working with pharmaceuticals, fine chemicals or natural compounds that need to determine the molecular structure of substances.

The inventor of the technology, Dr Makoto Fujita, Distinguished Professor of the University of Tokyo and the Institute for Molecular Science, continues to be involved in the project through the University of Tokyo and the Japan Science and Technology Agency.

The partnership will combine the unique knowledge of innovative life science products and the analytical consumable market of Merck KGaA, Darmstadt, Germany, with Rigaku’s strengths as a manufacturer and distributor of X-ray devices. It creates an outstanding strategic opportunity for both companies to establish leading products for chemical laboratories in this market sector.

The innovation project is being hosted at the Innovation Center of Merck KGaA, Darmstadt, Germany, which aims to grow ideas into viable new businesses beyond the current scope of the company’s activities. In accordance with a company builder approach, it provides dedicated support, clear governance and decision making in a protected start-up-like environment to efficiently grow and scale innovation projects. By offering such a protected innovation ecosystem, the Innovation Center builds the bridge between the agility of a start-up and the more complex processes of an established corporate group.

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More about the innovation project: crystallinesponge.emdgroup.com

About Rigaku

Since its inception in 1951, Rigaku has been at the forefront of scientific, analytical and industrial instrumentation technology. Today, with hundreds of major innovations to their credit, the Rigaku Group of Companies are world leaders in the fields of general X-ray diffraction (XRD), thin film analysis (XRF, XRD and XRR), X-ray fluorescence spectrometry (TXRF, EDXRF and WDXRF), small angle X-ray scattering (SAXS), protein and small molecule X-ray crystallography, Raman spectroscopy, X-ray optics, semiconductor metrology (TXRF, XRF, XRD and XRR), X-ray sources, computed tomography, nondestructive testing and thermal analysis.

Rigaku employs over 1,400 people in the manufacturing, sales and support of its analytical instrument, which is used in more than 90 countries around the world for research, development, and quality assurance activities. Throughout the world, Rigaku continuously promotes partnerships, dialog, and innovation within the global scientific and industrial communities.

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About Merck KGaA, Darmstadt, Germany

Merck KGaA, Darmstadt, Germany, a leading science and technology company, operates across healthcare, life science and performance materials. Around 52,000 employees work to make a positive difference to millions of people's lives every day by creating more joyful and sustainable ways to live. From advancing gene editing technologies and discovering unique ways to treat the most challenging diseases to enabling the intelligence of devices – the company is everywhere. In 2018, Merck KGaA, Darmstadt, Germany, generated sales of € 14.8 billion in 66 countries.

The company holds the global rights to the name and trademark "Merck" internationally. The only exceptions are the United States and Canada, where the business sectors of Merck KGaA, Darmstadt, Germany operate as EMD Serono in healthcare, MilliporeSigma in life science, and EMD Performance Materials. Since its founding 1668, scientific exploration and responsible entrepreneurship have been key to the company's technological and scientific advances. To this day, the founding family remains the majority owner of the publicly listed company.