# Press Information

## Kyoto Sangyo University, Kyocera, and Photocross collaborate on world-first[1] ground-based telescope innovations

**Shaping the future of earth-based astronomy.**

**Kyoto/London, 10th October 2024.** Kyoto Sangyo University established the Koyama Astronomical Observatory in 2010. Based on the concept of "industry-academia collaboration," which is also the university's spiritual pillar, the observatory has been developing cutting-edge astronomical instruments as a "monozukuri" (manufacturing) base, with a focus on collaboration with various companies. Particularly in the development of infrared astronomical instruments, the observatory has led the world in observational research using the high-sensitivity near-infrared high-dispersion spectrograph "WINERED". It is also developing small and lightweight infrared high-dispersion spectrographs that can be mounted on ultra-small satellites.

To realize a reflecting telescope equipped with a large, lightweight Fine Cordierite mirror, a world's first achievement[1], and to develop ceramic reflective optical systems for infrared astronomical observation instruments, Kyoto Sangyo University, Kyocera Corporation (hereafter "Kyocera"), and Photocross, Co., Ltd. (hereafter "Photocross") have reached a comprehensive and detailed agreement. This agreement outlines each party's roles and responsibilities, the project timeline, and the expected outcomes, ensuring a coordinated and effective collaboration.

**Main features of the project**

**1. Upgrading Araki Telescope with ceramic mirror technology**

The observatory plans to upgrade the primary mirror of the Araki Telescope, the largest telescope at a private university currently installed in the Koyama Astronomical Observatory, from the existing glass mirror to a lighter ceramic mirror. Kyocera will manufacture the large, aspherical concave mirror (and small aspherical convex mirror) using its Fine Cordierite ceramic material, which is characterized by minimal shape deformation due to ambient temperature changes. Photocross, an optical instrument manufacturer, will be responsible for the precision inspection and measurement of the mirror shape and will develop a holding mechanism for the primary mirror as the three parties continue to take on various challenges.

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[1] As of July 31, 2024, this is the first time a primary and secondary mirror made of Fine Cordierite will be installed in a large ground-based telescope (according to Kyocera's research).

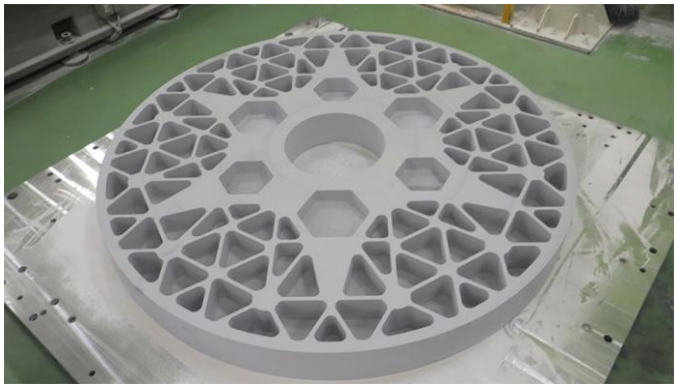
**2. Revolutionizing scientific research through next-generation telescope innovations**

The development of next-generation ground-based large telescopes (30 meters in diameter or larger) and infrared observation instruments mounted on space telescopes is set to revolutionize the future of astronomical research. Kyoto Sangyo University, in collaboration with Photocross, is at the forefront of this transformation, working to realize a next-generation infrared high-dispersion spectrograph using Kyocera's Fine Cordierite material for the reflective optical system. This agreement will accelerate technology development and foster human resource development in related fields, paving the way for exciting new discoveries and a brighter future for astronomy.

**3. Comprehensive collaboration for mutual development in human resource enhancement**

In the future, Kyoto Sangyo University will cooperate with Kyocera and Photocross in reskilling, technology development, and verification at companies through the initiatives of this agreement. In addition, each company will contribute to student education at the university, aiming for the development of all three parties in human resource development.

**Araki telescope owned by Kyoto Sangyo University**



**Kyocera's Fine Cordierite primary mirror**

## For more information on Kyocera: uk.kyocera.com

## About Kyocera

Kyocera has been successful in Europe for over 50 years. From its European headquarters in Esslingen am Neckar, KYOCERA Europe GmbH operates 26 sites including manufacturing facilities, with products ranging from fine ceramics, electronics, automotive, semiconductor and optical components to industrial tools, LCDs, touch solutions, industrial printing components, solar systems and consumer goods such as kitchen and office products.

Kyocera's high-performance ceramic products are produced and distributed by KYOCERA Fineceramics Europe GmbH, a subsidiary of KYOCERA Europe GmbH. The Kyocera Group is one of the world's leading providers of high-performance ceramic components for the technology industry, offering over 200 different ceramic materials, as well as state-of-the-art technologies and services tailored to the specific needs of each market.

KYOCERA Europe GmbH is a company of the KYOCERA Corporation headquartered in Kyoto/Japan, a world leader in semiconductor, industrial and automotive components as well as electronic components, printing and multifunction systems, and communications technology. The technology group is one of the world's most experienced manufacturers of smart energy systems, with more than 45 years of industry expertise. The Kyocera Group comprises 292 subsidiaries (31 March 2024). In England, Kyocera has a subsidiary in Frimley, KYOCERA Fineceramics Ltd. With around 79,200 employees, Kyocera generated net annual sales of around EUR 12.29 billion in the 2023/2024 fiscal year.

Kyocera is ranked 672 on Forbes magazine's 'Global 2000' list for 2023, and ranked as 'The 100 Most Sustainably Managed Companies in the World' according to the Wall Street Journal. For the second year in a row, Kyocera qualified for the Dow Jones Sustainability Index (Asia-Pacific). As well, Kyocera receives a Gold rating on EcoVadis Sustainability Survey for the second consecutive year and was acknowledged as a 'Top 100 Global Innovator 2023', being one of the world's leading innovators, for the eighth time by Clarivate.

The company also takes an active interest in cultural affairs. The Kyoto Prize, a prominent international award, is presented each year by the Inamori Foundation — established by Kyocera founder Dr Kazuo Inamori — to individuals worldwide who have contributed significantly to the scientific, cultural, and spiritual betterment of humankind (equivalent to approximately €596,500 per prize category).

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## About Kyoto Sangyo University

Kyoto Sangyo University is a private higher education institution based in suburban Kyoto, Japan. Founded in 1965 by Japanese astrophysicist Dr Toschima Araki, the university was initially opened with two core faculties: Economics and Science. It has since grown to 10 faculties with 18 departments covering a range of degree courses across social studies, humanities and natural sciences.
https://www.kyoto-su.ac.jp/index-e.html

## About Photocross, Co., Ltd.

Photocross offers a wide range of optics-related technology services. With a team of optical professionals from diverse backgrounds, the company provides concrete solutions to a broad array of challenges.
https://photo-cross.com/