

2025 年 8 月 22 日

「Newsweek International」 および「The Worldfolio」に 当社記事が掲載されました

この度、当社の透明 YAG セラミックス技術と CO₂ 固定化に向けての取り組みが、2025 年 7 月 25 日発売『Newsweek International(ニューズウィーク国際版)』に別添のとおり掲載されました。

Newsweek は世界 59 か国で発行部数約 400 万部（紙媒体、電子版合計）を誇る国際的な週刊誌で、政治や社会情勢など幅広いテーマを取り上げています。

本記事は、英国の通信会社「The Worldfolio」の取材に基づく内容で、同社によるインタビュー記事が 2025 年 8 月 20 日に「The Worldfolio」のウェブサイト上で公開されました。

<The Worldfolio 記事リンク>

<https://www.theworldfolio.com/interviews/building-tomorrow-the-craft-and-innovation-driving-konoshima-chemical-japans-materials-leader/6971/>

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Konoshima Chemical Advances Sustainable Material Solutions

Konoshima Chemical pioneers transparent ceramics and CO₂ recycling technologies, facilitating global research and development of future technologies and providing materials for a more sustainable industry.



By Daniel de Bomford and Arthur Menkes



"We are a company that delivers solutions to society through CO₂ reduction, clean energy and transparent ceramics."

Akira Fukawa, president,
Konoshima Chemical Co. Ltd.

The world is racing toward a greener future, and the materials of tomorrow are being created today. For industries such as energy, high-tech manufacturing and construction to reach greater heights in advanced research and manufacturing, they require cutting-edge solutions. For over a century, Konoshima Chemical has been a leading Japanese company in materials and chemical research, development and manufacturing. More recently, its efforts in CO₂ reduction, clean energy and transparent ceramics have garnered international attention.

The company is pioneering transparent ceramics, particularly yttrium aluminum garnet (YAG), which is being adopted across industries. YAG ceramics fill a variety of niches, including scientific research, medical, defense, industrial, fusion ener-

gy and high-intensity laser systems. In particular, the ceramics' high transparency enables stable, high-output lasers required for fusion research and advanced physics, as its large size and superior thermal and mechanical durability outperform those typically employed in single crystals. Konoshima Chemical's ceramics are being evaluated as critical components in high-powered laser assemblies critical for experimental fusion reactors. Laser fusion energy systems utilize extremely powerful laser pulses to rapidly compress and heat fuel, creating the extreme temperatures and pressures necessary to ignite a controlled thermonuclear reaction that releases vast amounts of clean energy, much like stars.



Takuma Factory, (Kagawa, Japan)

Konoshima Chemical ensures stable quality and can customize the dopant concentration levels to user requirements. The company's transparent ceramics have been well-received internationally, as evidenced by the ceramics' adoption by NASA and the Lawrence Livermore National Laboratory in the United States. He sees the 10 to 20-centimeter segment as having the greatest potential for Konoshima Chemical's global expansion, as the company is the



Transparent YAG ceramics for various applications

only producer capable of achieving quality higher than that of a crystal. There is considerable potential in autonomous vehicles; however, production costs remain relatively high for the consumer market.

Konoshima Chemical's ceramics have a wide variety of applications across industries and scientific disciplines. Its Bonded LuAG Ceramic Scintillators are a key component in ultra-high-resolution X-Ray imaging. Developed with Japan's RIKEN and the High Luminance Photon Science Institute, this technology enables 200 nm resolution—nearing the theoretical limit of X-ray imaging. The detector uses LuAG:Ce ceramics, bonded with precision for unmatched clarity. It's applied in advanced imaging systems for detailed biological and material studies.

Konoshima Chemical has been recognized for advancing material performance and efficiency, reducing carbon emissions and promoting a safer, more human-centric work environment. "Our factory emits a significant amount of CO₂, and we recognized that this isn't sustainable for the future. That led us to consider what actions we could take," Fukawa says. When the company began exploring CO₂ recycling, synergies within the company emerged. Konoshima Chemical has developed an innovative technology that can convert emissions into a valuable material. The company is in the early stages of its long-term plan to establish a system that utilizes the carbonization technology it developed for producing carbonate compounds as a raw material, achieving factory-level net-zero CO₂ emissions—a first in Japan. "Our system has potential applications

beyond our own operations and could be adopted by other companies and industries," he says. The company was awarded the Good Design Award, which has led to enquiries within Japan. Fukawa says that the company plans to promote it globally, as it is well-suited for international use. While there are theoretical alternatives, Konoshima Chemical's solution is already available. "If the right conditions are in place, it can be deployed anywhere in the world right away," he says.



Bonded ceramics for Q-switch applications

With 108 years of operation under its belt, Konoshima continues to innovate, push boundaries and find solutions for tomorrow's challenges. As its transparent ceramics enable breakthroughs in energy and science, its CO₂ recycling is turning emissions into building materials. The company is reshaping advanced manufacturing and positioning itself as an innovative leader as global industries seek sustainable, high-performance materials. Speaking on ceramics, Fukawa, the company's goals, "Moving forward, we hope to expand our reach into the private sector and generate sales in those areas."



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Examples of various colors by changing dopant ions in YAG



Bonded ceramics for nuclear fusion applications



Scintillators and phosphors