OXIDE

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OXIDE Corporation
Masayuki Yamamoto,
President (COO &CFO)

New Product Launch:

High-Pulse-Energy Deep Ultraviolet Laser for Semiconductor Back-End Processes

~Contributing to Improved Yield and Process Shortening in Semiconductor Manufacturing through High-Precision, Low-Damage Microfabrication~

OXIDE Corporation (Headquarters: 1747-1 Maginohara, Mukawa, Hokuto, Yamanashi, Japan ; President (COO &CFO): Masayuki Yamamoto) will add a new high-pulse-energy model for semiconductor back-end processes to its flagship product line, the deep ultraviolet (DUV) picosecond laser series "QCW Kalama" (Note1),which has been specialized for semiconductor wafer defect inspection (front-end processes). Sales will commence on December 17, 2025.

This product marks the first commercialized laser developed for semiconductor back-end applications. It provides an optimal solution for high-precision, low-damage microfabrication processes required in back-end operations, such as forming fine structures and selectively processing special materials.

"QCW Kalama" Series High Pulse Energy Model

1. The Importance of Lasers in Advanced Packaging (Back-End Processes)

Against the backdrop of the rapid proliferation of technologies like generative AI, semiconductors are seeing increased importance in high-density mounting and microfabrication within advanced packaging (back-end processes), alongside chip miniaturization. In these microfabrication fields, laser technology—capable of non-contact, high-precision processing—is gaining attention as a powerful method to

complement or replace conventional machining and etching processes. Laser-based processing enables high dimensional accuracy and low-damage processing in applications such as microvia formation, redistribution layer processing, and laser dicing, leading to its expanding adoption across semiconductor manufacturing.

Our company has secured a global market share by supplying high-power, long-life deep ultraviolet lasers for wafer defect inspection equipment in the semiconductor front-end process. We will now leverage the technological foundation cultivated through these laser products to develop laser microfabrication equipment for the semiconductor back-end process.

2. Product Overview

The "QCW Kalama" Series High Pulse Energy Model is a picosecond laser achieving a wavelength of 266nm, a pulse width of approximately 30ps, a repetition frequency of 1MHz, and a pulse energy >1μJ.This product was developed for applications in semiconductor back-end processes requiring extremely high precision and minimal thermal effects, such as microstructure formation and selective processing of special materials. Compared to conventional visible and ultraviolet lasers, it enables high-precision processing with low damage and contributes to higher throughput, significantly improving semiconductor manufacturing yield and reducing process time.

[Key Features]

- Combines high pulse energy (>1μJ), effective for microstructure formation and selective processing of special materials in semiconductor back-end processes, with high throughput suitable for mass production facilities
- Based on the core technology of the "QCW Kalama" series, it minimizes thermal effects on materials by combining deep ultraviolet wavelengths with picosecond pulses
- Dramatically improves processing accuracy in microstructure formation and selective processing of special materials, contributing to improved semiconductor manufacturing yield
- Achieves reduced processing time and enhanced productivity with a 1MHz repetition rate, contributing to process shortening

(Note1) a picosecond laser : Lasers are classified into those that emit light continuously and those that emit light intermittently in repeated bursts; the latter are called pulsed lasers. Pulsed lasers emit light for a fixed duration repeatedly, and lasers where this duration ranges from several picoseconds to several hundred picoseconds are called picosecond lasers. A picosecond represents an extremely short time of one trillionth of a second.

Contact for inquiries regarding this matter
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[Company Overview]

OXIDE Corporation was founded in 2000 as a venture company originating from the National Institute for Materials Science (NIMS). The Company is headquartered in Hokuto City, Yamanashi Prefecture, Japan, where it operates its head office and manufacturing facilities, and also maintains a business office in Hodogaya Ward, Yokohama City, Kanagawa Prefecture. Since its establishment, OXIDE Corporation has aimed to become a global niche leader in the fields of single crystals and lasers. Guided by the following management philosophy, the Company has continuously focused on businesses in which it can fully leverage its strengths in single-crystal development and optical technologies across the optical value chain. Management Philosophy: Be a global-niche-top company in Single Crystals and Lasers ・Use the results of our research to benefit society, and provide key materials to the world ・Provide material solutions to customers and contribute to the development of society ・Develop products centered on single crystals, and continue to create future market opportunities The Company's core business consists of the development, manufacturing, and sales of single crystals, optical components, laser light sources, and optical measurement systems—technologies that are essential to the "Age of Light" in the 21st century. OXIDE operates three business domains: New Frontiers, Semiconductors, and Healthcare. In recognition of its technological excellence and global competitiveness, OXIDE was selected as one of the Ministry of Economy, Trade and Industry's Global Niche Top 100 Companies in 2014. In February 2021, the Company received the Grand Prix at the Small Giants Award 2021, hosted by Forbes Japan. OXIDE's distinctive strengths include: a strong base of highly specialized experts and engineers in single-crystal and optical technologies, enabling sustained growth as a research-driven technology company; and proven capabilities in acquiring optical technologies from both domestic and international companies and successfully commercializing them. These strengths form the foundation of the Company's originality and competitive advantage.