September 10, 2026

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Notice Regarding Presentation of Research Results on Photomask Defect Repair Technology by Consolidated Subsidiary HOLON

HOLON CO., LTD. ("HOLON"), a consolidated subsidiary of A&D HOLON Holdings Company, Limited, presented research results on photomask defect repair technology utilizing an aberration-corrected scanning electron microscope (SEM) at SPIE Photomask Technology + Extreme Ultraviolet Lithography 2026, an international conference in the field of photomask technology taking place in Monterey, California, U.S.A., from September 8 to 11, 2026.

As described in the attached Reference Material 1, HOLON reported research results confirming the practicality of photomask defect repair technology through various performance evaluations.

HOLON is developing a photomask defect repair system equipped with an aberration-corrected SEM column by applying the electron-optical technologies it has cultivated through its CD-SEM business, and this presentation presents some of the research results from that development.

In recent years, photomask defect repair technology has played a critical role in improving photomask yield. As curvilinear patterning has been increasingly adopted to enhance lithographic performance, higher levels of repair accuracy and shape fidelity have become increasingly important. Please refer to the attached Reference Material 2 for the technical background of this technology.

The Group will continue to pursue the creation of new value in semiconductor-related fields through further advancements in electron-beam application technologies.

This matter relates to research and development activities and will have no impact on the Group's financial results for the fiscal year ending March 31, 2027.

[Reference Material 1] Overview of the Research Results

- By leveraging the aberration-correction optical system incorporated in Holon's CD-SEM platform, an extremely small electron beam diameter can be maintained even at the low accelerating voltages required for defect repair, enabling highly accurate defect repair processing.
- The system was evaluated across a range of performance metrics, including repair process repeatability, dimensional control, finished repair profile, repair accuracy, and optical characteristics after repair. The results confirmed that the system meets practical requirements for photomask defect repair applications.

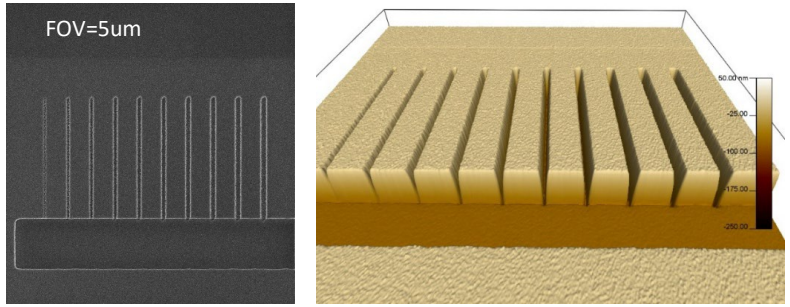

Figure3 Repair Process Dimensional Control

Line widths of 40–110 nm were achieved.

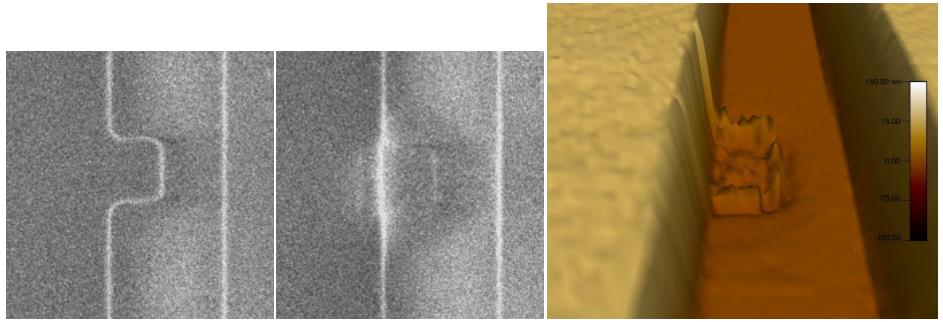

Figure4 Repair Profile Quality

Sidewall profile after repair of a 300 nm defect. The repaired feature exhibited a well-defined profile with near vertical sidewalls.

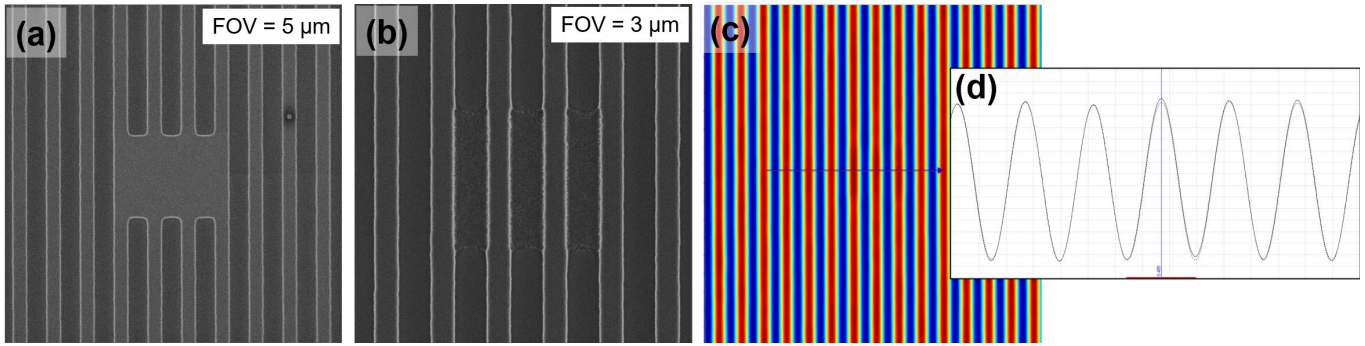

Figure5 Evaluation of Optical Characteristics After Repair

Three adjacent bridge defects formed on a 250 nm line-and-space pattern were repaired and subsequently evaluated using an Aerial Image Measurement System (AIMS) at the lithography transfer wavelength of 193 nm. The repaired region showed optical performance comparable to the surrounding L/S pattern, with no obvious degradation.

* Prepared based on presentation materials from "SPIE Photomask Technology + Extreme Ultraviolet Lithography 2026"

[Reference Material 2] Technical Background of Photomask Defect Repair Technology

Mask repair technology plays a critical role in improving mask yield. To enhance both productivity and repair accuracy in this process, advancements in the underlying electron microscopy technology are a key enabling factor. Furthermore, in DUV technology, curvilinear patterning—introduced to improve lithographic performance—is increasingly adopted, leading to more stringent requirements for shape fidelity in mask repair.

We are developing a mask repair tool equipped with an aberration-corrected SEM column, which results in a smaller electron beam spot and a higher resolution. We evaluated the mask repair performance for repair accuracy, optical property of repaired sites, and throughput. We report the evaluation results.

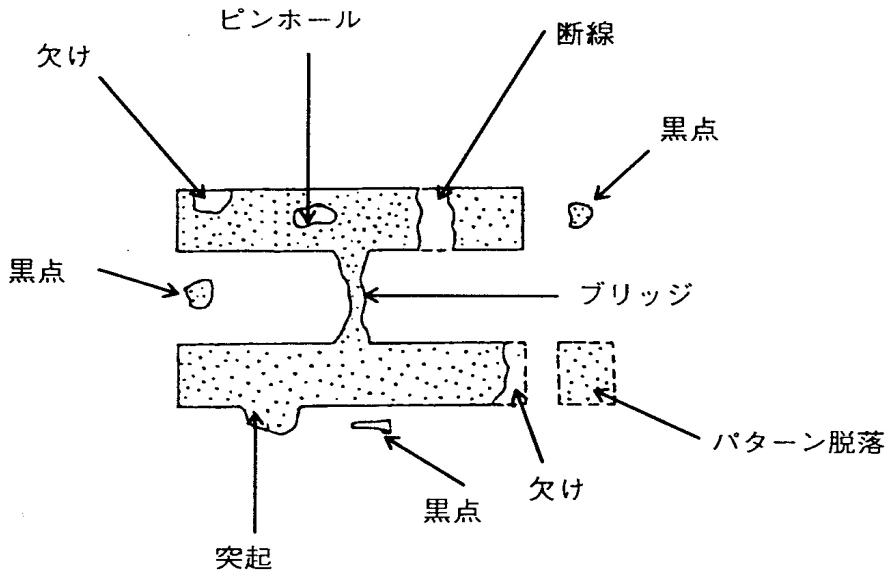

Figure1　フォトマスクの欠陥

（「入門フォトマスク技術」田辺功、竹花洋一、法元盛久、２００６年、工業調査会より）

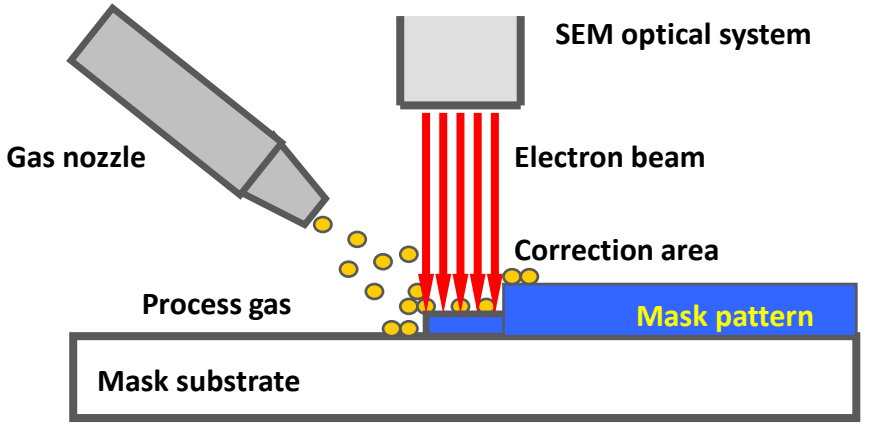

Figure2　Principles of Electron Beam-Based Photomask Defect Repair

The precursor gas is supplied through a nozzle positioned above the mask. The gas flow rate is controlled by adjusting the temperature of the gas source. The supplied gas molecules are adsorbed onto the mask surface and are dissociated by electron beam irradiation. The resulting reactive species interact with the mask material to form volatile products, which are removed from the surface. Since this reaction occurs mainly in the area scanned by the electron beam, localized, high precision etching can be achieved.

* Prepared based on presentation materials from "SPIE Photomask Technology + Extreme Ultraviolet Lithography 2026"