SCANNING ELECTRON MICROSCOPY TAKES THE SPOTLIGHT IN ANNUAL DEEP LEARNING SURVEY BY THE EBEAM INITIATIVE

ESOL, Fractilia and HJL Lithography Join the eBeam Initiative

SAN JOSE, Calif., March 1, 2022—The eBeam Initiative, a forum dedicated to the education and promotion of new semiconductor manufacturing approaches based on electron beam (eBeam) technologies, today published its second annual Deep Learning (DL) survey of its members' products and applications using DL in the photomask to wafer manufacturing flow. The list has been updated from last year, and scanning electronic microscopy (SEM) applications represent the majority of new applications added to the list. Since SEM images are pixelated dose maps, almost all of the DL-based computer vision techniques can be applied to these SEM images for improved photomask and wafer metrology and analysis. The complete list of DL applications from 12 member companies can be found at www.ebeam.org.

The eBeam Initiative also announces the addition of three new company members to the organization: ESOL, a pioneer in EUV metrology solutions; Fractilia, a leader in stochastics metrology and control solutions; and HJL Lithography, a lithography consulting firm. Dr. Harry Levinson, principal lithographer at HJL Lithography, was named the recipient of the prestigious 2022 Frits Zernike SPIE Award for Microlithography, and will be recognized by the eBeam Initiative during its 14th annual meeting being held virtually later today.

DL has become an integral part of the success of many companies, yet only 22 percent of participants in the 2021 eBeam Initiative Luminaries survey see DL becoming a competitive advantage in photomask manufacturing by 2022. "There is a rich set of DL libraries available for image processing, so it makes sense that SEM image analysis leads the way in our industry too. However, in our industry, manufacturing sample wafers or masks to produce actual SEM pictures is expensive, time consuming and resource intensive, and sample pictures are not available in the public domain due to confidentiality. This makes the use of digital twins to generate mimicked SEM images in order to do DL training a critical factor for production success," stated Aki Fujimura, CEO of D2S, the managing company sponsor of the eBeam Initiative.

Added Fujimura, "Congratulations to our colleague, Harry Levinson, on being honored with the Frits Zernike SPIE award, and a warm welcome to all of our new members. We look forward to their participation and contributions as we work together to enhance the state of the art, including high-NA EUV masks and curvilinear masks."

About The eBeam Initiative

The eBeam Initiative provides a forum for educational and promotional activities regarding new semiconductor manufacturing approaches based on electron beam (eBeam) technologies. The goals of the Initiative are to reduce the barriers to adoption to enable more integrated circuit (IC) design starts and faster time-to-market while increasing the investment in eBeam technologies throughout the semiconductor ecosystem. Members, which span the semiconductor ecosystem, include: aBeam Technologies; Advantest; Alchip Technologies; AMTC; Applied Materials; Artwork Conversion; Aselta Nanographics; ASML; Cadence Design Systems; Canon; CEA-Leti; D2S; Dai Nippon Printing; EQUIcon Software GmbH Jena; ESOL; Fractilia; Fraunhofer IPMS; Fujitsu Semiconductor Limited; GenISys GmbH; GlobalFoundries (GF); Grenon Consulting; Hitachi High-Tech Corporation; HJL Lithography; HOLON CO., LTD; HOYA Corporation; imec; IMS CHIPS; IMS Nanofabrication AG; JEOL; KIOXIA; KLA; Micron Technology; Multibeam Corporation; NCS; NuFlare Technology; Petersen Advanced Lithography; Photronics; QY Mask; Samsung Electronics; Semiconductor Manufacturing International (Shanghai) Corporation (SMIC); Siemens EDA; STMicroelectronics; Synopsys; TASMIT; Tokyo Electron Ltd. (TEL); TOOL Corporation; Toppan Inc.; UBC Microelectronics; Vistec Electron Beam GmbH; Xilinx and ZEISS. Membership is open to all companies and institutions throughout the electronics industry. To find out more, please visit www.ebeam.org.

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