1. Title:	Evaluation of TaSix Absorber Stack with a Novel Buffer for EUVL Mask
2. Full names of all authors:	Shinpei Tamura, Koichiro Kanayama, Yasushi Nishiyama, Hideyuki Eguchi, Masato Kon, Tadashi Matsuo, Akira Tamura, Susumu Nagashige, Shinji Akima

3. Abstract body:

In order to apply EUVL to 32nm node and beyond, it is necessary to develop EUVL mask having high CD and image placement accuracies, simultaneously to establish defect inspection and repair technologies. To realize such masks, we have to develop mask fabrication process. However, as pattern accuracies greatly depend on blank film properties, we need optimization of blank material, which is closely related with fabrication process optimization. Since EUVL mask is a reflective type mask, reflective light such as DUV laser light is used for defect inspection. EUVL mask before absorber defect inspection is characterized as the structure that there lies a stack of layers composed by buffer and capping layer on Mo/Si multi layer. Generally, EUVL mask strictly needs not only absorber defect inspection/repair but buffer defect inspection/repair after buffer layer etching. We have proposed bi-layer absorber made by Ta based material added by a few Si (TaSix). Since the bi-layer TaSix absorber has amorphous structure and high dry etching rate, it facilitates to get highly fine patterns by using thinner EB resist. In this presentation, we evaluated bi-layer TaSix absorber stack composed by a novel buffer film. We aimed to buffer film not need to remove as a completed mask shape because of high EUV transparency of the buffer film. Actually, we fabricated bi-layer TaSix absorber pattern on the novel buffer film, successively evaluated patterning properties, defect repair, and/or inspection performance. Repair tools were used AFM machining and/or FIB ones. The detailed results will be shown in the presentation.