

## **Abstract: 2006 International Extreme Ultraviolet Lithography Symposium**

### **1. Title**

Carbon deposition on multi-layer mirrors by extreme ultra violet ray irradiation

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### **3. The 200-word maximum abstract**

Mirror reflectance degradation is still one of critical issues of EUV lithography. It is mainly caused by oxidation of multi-layer mirror surface material and carbon deposition onto the mirror. In EUVA project, we are developing the contamination control technique using the SuperALIS SR facility (NTT Atsugi) with ultra high vacuum experimental setup. We presented the degradation by oxidation of multi-layer mirror at the 2005 EUVL symposium. This time, we forced on carbon deposition.

Organic molecules are in an Extreme ultraviolet (EUV) lithography tool. In the tool, EUV irradiation causes carbon deposition on multi-layer mirrors. These deposited carbons from organic molecules absorb the EUV light and leads to the mirrors degradation. This carbon deposition phenomenon was researched. We irradiated EUV light on (Si/Mo) multi-layer mirrors pumping many kinds of organic molecules like decane, decanol, methyl nonanoate, diethyl benzen and dimethyl phthalate. Reflectance changes and surface analysis revealed effective organic molecules and the speed of carbon deposition. This work is supported by NEDO.