# Contamination & Optical lifetime Update

IEUVI Contamination and Optics Lifetime TWG

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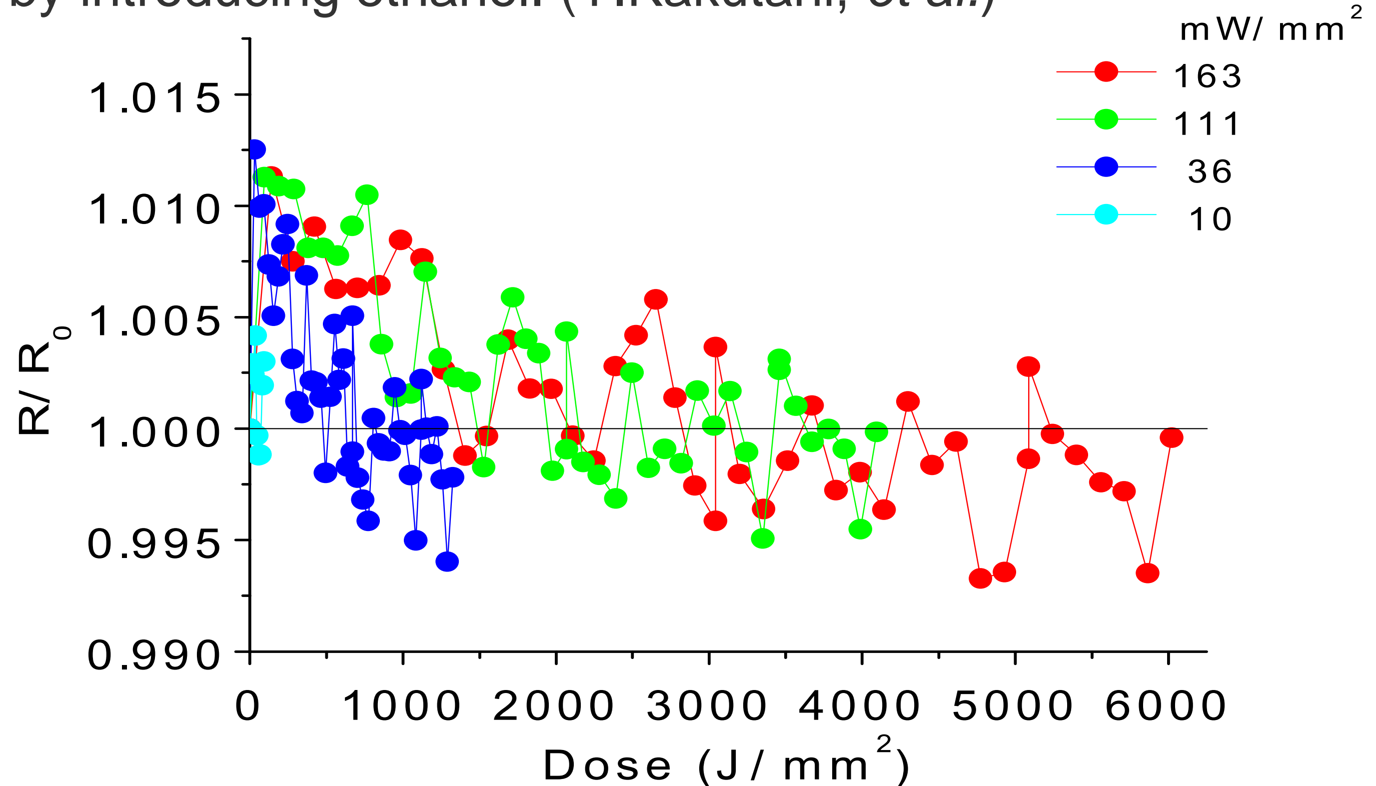
Recent Activity

1. Recovery of the reflectivity loss,
2. Deposition

# Introduction of EtOH suppresses reflectance degradation

6517-111, Poster Session: Long-time durability of Ru capping Layer for EUVL projection optics by introducing ethanol. (Y.Kakutani, *et al.*)

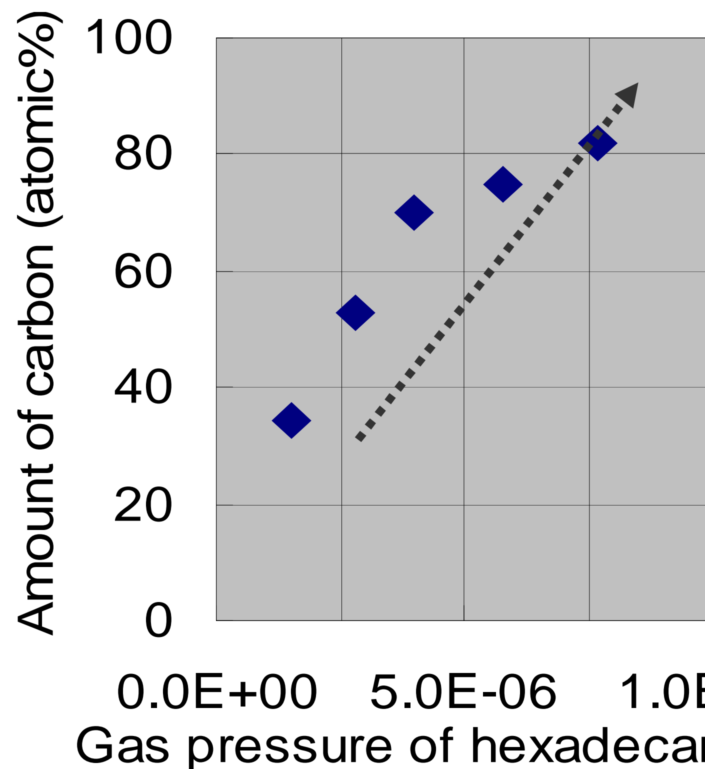
Introducing ethanol of a little higher than $2.0\times10^{-6}$ Pa into water vapor pressure of $1.3\times10^{-5}$ Pa would be the best condition to suppress the reflectance degradation because both carbon deposition and oxidation would be reduced.




Dose dependence of relative reflectance changes. The sample was irradiated under the condition of $1.3\times10^{-5}$Pa $H_2O$ and $2\times10^{-6}$Pa EtOH.

# Dependence on Organic Gas Pressure

6517-107, Poster session: Carbon deposition on multilayer mirrors by extreme ultraviolet ray irradiation (S.Matsunari, *et al.*)




**Condition:**

**Hexadecane,**

**180 J/mm$^2$ EUV dose**

B.P. 287 ℃
M.W. 134

**> Carbon deposition increase with gas pressure.**