EXTREME ULTRAVIOLET LITHOGRAPHY

1. Title:	Gibbsian Segregating Alloys Driven by Thermal and Ion Flux Gradients
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3. Abstract body:

Collector optic lifetime is dependent on surface chemistry interactions between fuels, mirror materials, and high-energy ion and neutral particle erosion. A Mo-Au Gibbsian Segregating alloy has been developed for erosion resistance and self-healing characteristics to improve collector lifetime. A thin Au segregated layer is maintained during exposure. When looking at pre and post exposure analysis of a GS Mo-0.56%Au alloy at 20o grazing incidence and 28 cm away from the plasma pinch after 2.2 million shots from a SnCl4-fueled DPP, it was seen that the while the surface roughness went from 1.8 to 7.9 + .5 nm, there were actually islands formed on the surface with surrounding areas to be very smooth. These islands were from contamination in the system and not from the ion impact damage as the bulk concentration of Au in Mo-Au alloy is ~ 0.56%, while ~ 40% Au was found at the film surface even after being eroded by ~ 20 nm. Au is segregating to the surface faster than it is being eroded. The material underneath the segregated layer was protected by this sacrificial layer. Theoretical and experimental effectiveness of the GS alloy used was shown.