



1. Title:	LPP-EUV sources using Cryogenic Xe and Lithium New Scheme Targets
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3. Abstract body:

We have been studying several laser-produced-plasma EUV sources by using cryogenic Xe or Lithium targets as deposition-free targets. In this paper, we report recent experimental studies on these EUV sources. A cryogenic Xe rotating drum target developed, has been demonstrated not only higher conversion efficiency (CE) but also less debris-characteristics in continuous rotating operation, compared to in a rest condition target. We will discuss these unique characteristics with measured data of EUV emission, ion, and neutral-particle. By using a 320Hz repetition-rate Nd:YAG slab laser system, we succeeded to generate EUV light continuously; a test of Mo/Si mirror damaged by debris is continued and this result will also be shown. A Lithium target used with a hot multi-layer mirror was proposed by Cymer, as a new deposition-free target. We have proposed a new "forced recombination" and/or "expansion energy re-conversion" Lithium target to enhanced EUV emission. In a normal planer target, temporal resolved EUV images indicated relatively long emission time and large emission area. But adding a wall in front of the target, the size of emission area was improved and the emission intensity was enhanced. A new cavity scheme target has been also demonstrated enhanced EUV intensity.