

Spectral characterization of the EUV emission of a gas discharge plasma light source ignited by a high voltage trigger

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In EUV lithography and metrology applications, total radiation output and brilliance of the EUV emission is critical. Therefore, before an experiment and measurements can be conducted, detailed characterization of the achievable emission is necessary to ensure success. We present characterization results of an upgraded gas discharge EUV source. The upgrade consisted of an active high voltage trigger, which stabilizes or even enables for the first time ignition at pressure and voltage ranges previously not accessible. A map of the absolutely calibrated spectrally resolved EUV output for different pressures, voltages and repetition rates with argon, nitrogen, oxygen, xenon and mixtures as fuel gases will be presented and combined with pinch images for brilliance determination. We used a compact EUV spectrometer in Rowland configuration, a calibrated EUV photodiode and a multilayer mirror to perform this characterization. The map will be used in planning of future experiments.