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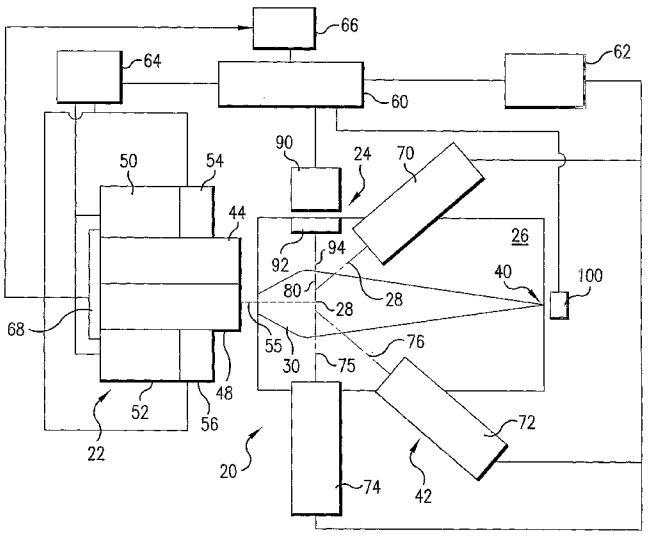
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(54) Title: COLLECTOR FOR EUV LIGHT SOURCE



(57) Abstract: A method and apparatus for debris removal from a reflecting surface of an EUV collector in an EUV light source is disclosed which may comprise the reflecting surface comprises a first material and the debris comprises a second material and/or compounds of the second material, the system and method may comprise a controlled sputtering ion source which may comprise a gas comprising the atoms of the sputtering ion material; and a stimulating mechanism exciting the atoms of the sputtering ion material into an ionized state, the ionized state being selected to have a distribution around a selected energy peak that has a high probability of sputtering the second material and a very low probability of sputtering the first material. The stimulating mechanism may comprise an RF or microwave induction mechanism. The gas is maintained at a pressure that in part determines the selected energy peak and the stimulating mechanism may create an influx of ions of the sputtering ion material that creates a sputter density of atoms of the second material from the reflector surface that equals or exceeds the influx rate of the plasma debris atoms of the second material. A sputtering rate may be selected for a given desired life of the reflecting surface. The reflecting surface may be capped. The collector may comprise an elliptical mirror and a debris shield which may comprise radially extending channels. The first material may be molybdenum, the second lithium and the ion material may be helium. The system may have a heater to evaporate the second material from the reflecting surface. The stimulating mechanism may be connected to the reflecting surface between ignition times. The reflecting surface may have barrier layers. The collector may be a spherical mirror in combination with grazing angle of incidence reflector shells, which may act as a spectral filter by selection of the layer material for multi-layer stacks on the reflector shells. The sputtering can be in combination with heating, the latter removing the lithium and the former removing compounds of lithium, and the sputtering may be by ions produced in the plasma rather than excited gas atoms.

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