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(54) **Title:** OBJECT INSPECTION SYSTEMS AND METHODS

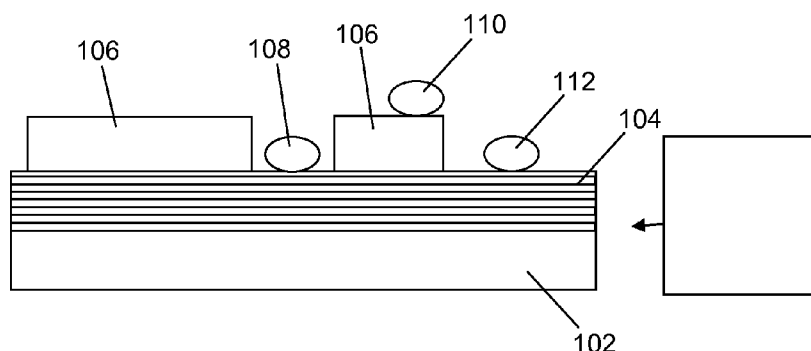


FIG. 1

(57) **Abstract:** Methods and systems for inspection of an object include the use of spectroscopic techniques for the detection of unwanted particles on an object's surface, based on the different responses of the unwanted particles as compared with the object to be inspected due to their different materials. Time resolved spectroscopy and/or energy resolved spectroscopy of secondary photon emission from the surface of the object can be used to obtain Raman and photoluminescence spectra. The objects to be inspected can for example be a patterning device as used in a lithographic process, for example a reticle, in which case the presence of metal, metal oxide or organic particles can be detected, for example. The methods and apparatus are highly sensitive, for example, being able to detect small particles (sub 100 nm, particularly sub 50 nm) on the patterned side of an EUV reticle.

