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(54) **Title:** OVERLAY MEASUREMENT USING MULTIPLE WAVELENGTHS

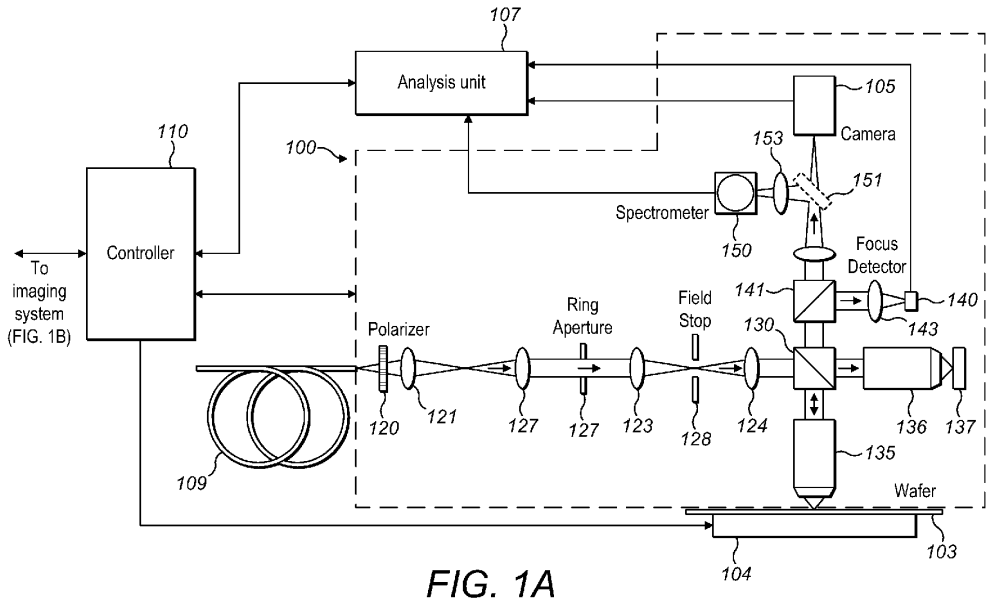


FIG. 1A

(57) **Abstract:** A method of determining OVL in a pattern in a semiconductor wafer manufacturing process comprises capturing images from a cell in a metrology target formed in at least two different layers in the wafer with parts of the target offset in opposing directions with respect to corresponding parts in a different layer. The images may be captured using radiation of multiple different wavelengths, each image including + 1 and - 1 diffraction patterns. A first and second differential signal may be determined for respective pixels in each image by subtracting opposing pixels from the + 1 and - 1 diffraction orders for each of the multiple wavelengths. An OVL for the respective pixels may be determined based on analyzing the differential signals from multiple wavelengths simultaneously. Then an OVL for the pattern may be determined as a weighted average of the OVL of the respective pixels. The weighting may be according to the sensitivity of the OVL to variation in wavelength.

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