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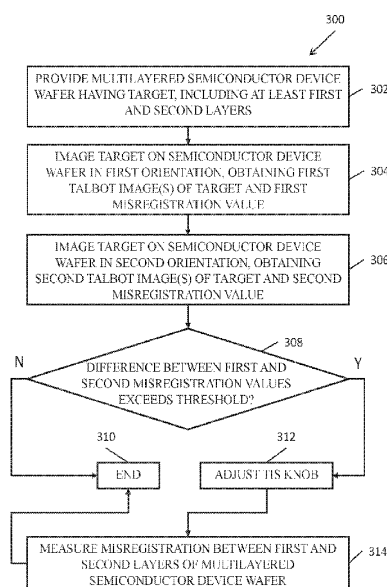


FIG. 3

(57) Abstract: A system and method of measuring misregistration in the manufacture of semiconductor device wafers is disclosed. A first layer and the second layer are imaged in a first orientation with a misregistration metrology tool employing light having at least one first wavelength that causes images of both the first periodic structure and the second periodic structure to appear in at least two planes that are mutually separated by a perpendicular distance greater than 0.2 μm . The first layer and the second layer are imaged in a second orientation with the misregistration metrology tool employing light having the at least one first wavelength that causes images of both the first periodic structure and the second periodic structure to appear in the at least two planes. At least one parameter of the misregistration metrology tool is adjusted based on the resulting analysis.

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