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(54) Title: UNIFORM GAPFILL DEPOSITION ON SEMICONDUCTOR SUBSTRATES WITH VARYING GEOMETRIES

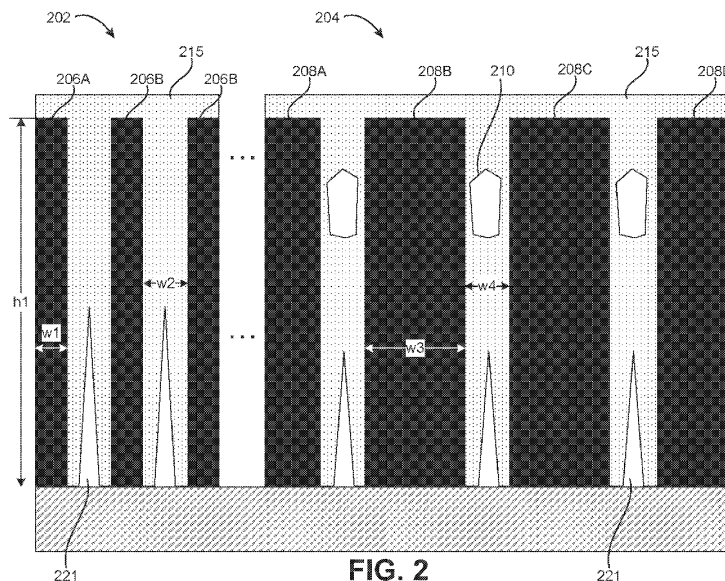


FIG. 2

(57) Abstract: A gapfill precursor may be provided to a processing chamber for filling features in a semiconductor structure. The features may have different critical dimensions. An etchant configured to etch the gapfill material may also be provided with the precursor. A plasma power in the chamber may have a duty cycle of a first RF power provided during a first time duration and a second RF power provided during a second time duration, where the second RF power is less than the first RF power. The RF power levels may be selected such that the gapfill material is deposited in the bottom of the features while being etched at a top of the features during the first time, and deposited on both the bottom and top of the features during the second time, where the features having different CDs finish the gapfill process at about the same time.

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