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(54) Title: METHODS FOR VARIABLE TILT ANGLE ETCHING, PATTERN IMPROVEMENT, CYCLIC SURFACE CONDITIONING, AND ETCHING SIDEWALLS OF FEATURES

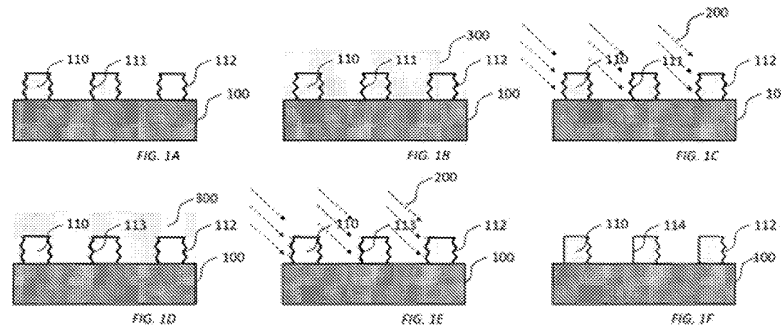


Fig. 1

(57) Abstract: The invention relates to a method for sidewall roughness control and structural defect reduction of features on a substrate. The method includes adjusting the tilt angle of a particle beam for angled particle beam etching of at least one sidewall of the features. This technique allows for improved control of sidewall roughness and structural defect reduction in various applications, such as semiconductor manufacturing. Methods for pattern improvement, cyclic surface conditioning, and etching sidewalls of features are also disclosed.

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