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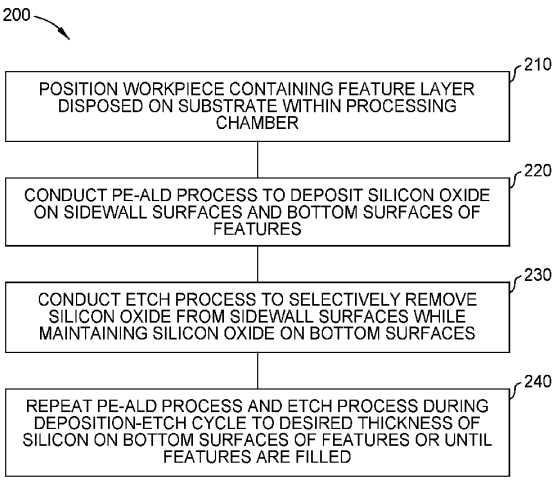


FIG. 2

(57) **Abstract:** Embodiments of the present disclosure generally relate to methods for silicon oxide gap filling of trenches and other features. The methods provide bottom-up processes to gapfill features with oxides, such as silicon oxide without voids, seams, or other defects. In one or more embodiments, a method for oxide gap filling is provided and includes providing a workpiece containing features, conducting a deposition-etch cycle to deposit a fill material containing silicon oxide into the features, and repeating the deposition-etch cycle including a PE-ALD process and an etch process to bottom-up fill the features with the fill material. The deposition-etch cycle includes conducting the PE-ALD process to deposit the silicon oxide on the sidewall surfaces and the bottom surfaces. The etch process is conducted to selectively remove the silicon oxide from the sidewall surfaces while maintaining the silicon oxide on the bottom surfaces.

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