

ABSTRACT OF THE DISCLOSURE
ALTERNATE STEPS OF IMP AND SPUTTERING PROCESS
TO IMPROVE SIDEWALL COVERAGE

The present invention provides a method and apparatus for achieving conformal step coverage on a substrate by PVD. A target provides a source of material to be sputtered by a plasma and then ionized. Ionization is facilitated by maintaining a sufficiently dense plasma using, for example, an inductive coil. The ionized material is then deposited on the substrate which is biased to a negative voltage. A signal provided to the target during processing includes a negative voltage portion and a zero-voltage portion. During the negative voltage portion, ions are attracted to the target to cause sputtering.

5 During the zero-voltage portion, sputtering from the target is terminated while the bias on the substrate cause reverse sputtering therefrom. Accordingly, the negative voltage portion and the zero-voltage portion are alternated to cycle between a sputter step and a reverse sputter step. The film quality and uniformity can be controlled by adjusting the frequency of the signal, the chamber pressure, the power supplied to each of the support

10 member and other process parameters.

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Fig. 3