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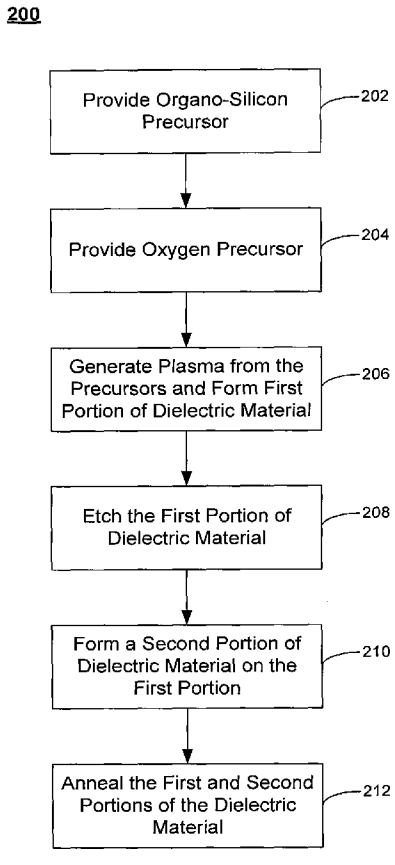
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(54) Title: FORMATION OF HIGH QUALITY DIELECTRIC FILMS OF SILICON DIOXIDE FOR STI: USAGE OF DIFFERENT SILOXANE-BASED PRECURSORS FOR HARP II - REMOTE PLASMA ENHANCED DEPOSITION PROCESSES



(57) Abstract: Methods of depositing a dielectric layer in a gap formed on a substrate are described. The methods include introducing an organo-silicon precursor and an oxygen precursor to a deposition chamber. The organo-silicon precursor has a C:Si atom ratio of less than 8, and the oxygen precursor comprises atomic oxygen that is generated outside the deposition chamber. The precursors are reacted to form the dielectric layer in the gap. Methods of filling gaps with dielectric materials are also described. These methods include providing an organo-silicon precursor having a C:Si atom ratio of less than 8 and an oxygen precursor, and generating a plasma from the precursors to deposit a first portion of the dielectric material in the gap. The dielectric material may be etched, and a second portion of dielectric material may be formed in the gap. The first and second portions of the dielectric material may be annealed.

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