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(54) Title: DEPOSITION OF METALS IN RECESSED FEATURES WITH THE USE OF HALOGEN-CONTAINING DEPOSITION INHIBITORS

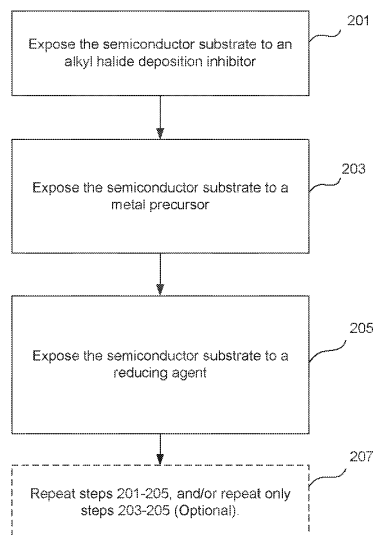


Figure 2A

(57) Abstract: Metal films, such as molybdenum films are deposited on a semiconductor substrate having one or more recessed features in a deposition process modulated by addition of a halogen-containing compound (e.g., an alkyl halide). In some implementations, a pre-treatment of a substrate with a halogen-containing compound is performed prior to contacting the substrate with a metal-containing precursor and a reducing agent. In some embodiments, the pre-treatment is performed such that the halogen-containing compound modifies the surface of the substrate to a greater degree in a field region of the substrate and near the opening of the recessed feature, as compared to the bottom portion of the recessed feature, where the modification of the substrate inhibits deposition of the metal. As a result, deposition of metals with improved step coverage can be achieved. In some implementations, modulation of deposition by halogen-containing compounds is used to achieve bottom-up metal growth in recessed features.

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