PRECURSORS FOR DEPOSITION OF MOLYBDENUM-CONTAINING FILMS

ABSTRACT

Molybdenum-containing films are deposited on semiconductor substrates using reactions of molybdenum-containing precursors in ALD and CVD processes. In some embodiments, the precursors can be used for deposition of molybdenum metal films with low levels of incorporation of carbon and nitrogen. In some embodiments, the films are deposited using fluorine-free precursors in a presence of exposed silicon- containing layers without using etch stop layers. The precursor, in some embodiments, is a compound that includes molybdenum, at least one halogen that forms a bond with molybdenum, and at least one organic ligand that includes an element selected from the group consisting of N, O, and S, that forms a bond with molybdenum, ln another aspect, the precursor is a molybdenum, compound with at least one sulfur-containing ligand, and preferably no molybdenum-carbon bonds.

Figure 4B