

COBALT ETCH BACK

ABSTRACT

Methods of etching cobalt on substrates are provided. Some methods involve exposing the substrate to a boron-containing halide gas and an additive, and exposing the substrate to an activation gas and a plasma. Additives improve selectively depositing a thicker layer of a boron-containing halide material on a surface of a mask than on a surface of a metal. Additives include H_2 , CH_4 , CF_4 , NF_3 , and Cl_2 . Boron-containing halide gases include BCl_3 , BBr_3 , BF_3 , and BI_3 . Exposures may be performed in two or more cycles, with variations in durations and/or bias power for each exposure in the two or more cycles.

FIG. 1