

SYSTEMS AND METHODS FOR COBALT METALIZATION

ABSTRACT

Systems and methods are described for depositing a TiN liner layer and a cobalt seed layer on a semiconductor wafer in a cobalt metallization process. In some embodiments the wafer is cooled after deposition of the TiN liner layer and/or the cobalt seed layer. In some embodiments the TiN liner layer and cobalt seed layer are deposited in process modules that are part of a semiconductor processing apparatus that also includes one or more modules for cooling the substrate. In some embodiments the cobalt seed layer may comprise a mixture of TiN and cobalt, a nanolaminate of TiN and cobalt layers or a graded TiN/Co layer.

FIG. 1