

ABSTRACT

**COBALT NITRIDE LAYERS FOR COPPER INTERCONNECTS
AND METHODS FOR FORMING THEM**

An interconnect structure for integrated circuits incorporates a layer of cobalt nitride that facilitates the nucleation, growth and adhesion of copper wires. The cobalt nitride may be deposited on a refractory metal nitride or carbide layer, such as tungsten nitride or tantalum nitride, that serves as a diffusion barrier for copper and also increases the adhesion between the cobalt nitride and the underlying insulator. The cobalt nitride may be formed by chemical vapor deposition from a novel cobalt amidinate precursor. Copper layers deposited on the cobalt nitride show high electrical conductivity and can serve as seed layers for electrochemical deposition of copper conductors for microelectronics.

Fig. 1