



ATOMIC LAYER DEPOSITION OF COBALT FROM COBALT METALLOORGANIC COMPOUNDS

Technical Description

It has been unexpectedly discovered that a metallic layer may be deposited by an ALD process from a metallorganic precursor (e.g. Cobalt) onto a noble or semi-noble metal substrate, using hydrogen or hydride as a reducing agent. The precursor, reducing agent and oxidizing agent are sequentially pulsed into a reaction chamber containing the substrate, and a purge gas is pulsed into the reaction chamber between each sequential pulse. The metal of the deposited layer may be Fe, Ru, Co, RH, Ir, Ni, Pd, Pt, Ag, or Au.

Technology Benefits

This invention represents a core technology for depositing Cobalt-containing alloys for giant magnetoresistance (GMR) applications (e.g. reading-head for computer hard drives). The invention describes a fundamental ALD metallorganic compound deposition process that overcomes process constraints of CVD where the growth rate is self-limiting as the rate of growth is proportional to the repetition rate of the reaction sequences rather than to the flux of reactant.

The application spaces for this technology within the semiconductor business are in:

- Process Integration, Devices and Structures
- Front End Processes

Stage of Development

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Contact Information

Please direct all inquiries, request for further information or general discussion on licensing terms to Director, Office of Technology Commercialization, using the information provided below.