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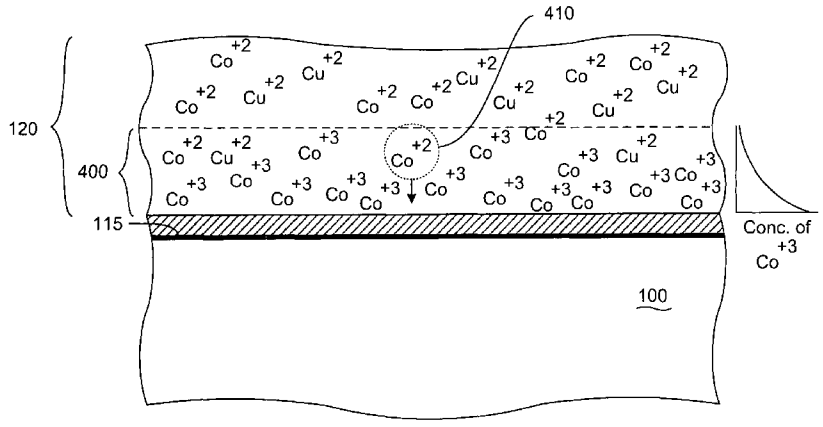
(54) Title: SELF-LIMITING PLATING METHOD



(57) Abstract: A self-limiting electroless plating process is provided to plate thin films with improved uniformity. The process comprises dispensing an electroless plating solution onto a substrate to form a quiescent solution layer from which a conformal plated layer plates onto a surface of the substrate by a redox reaction. The redox reaction occurs at the surface of the substrate between a reducing agent ion and a plating ion and produces an oxidized ion. Because the solution is quiescent, a boundary layer forms within the solution layer adjacent to the surface. The boundary layer is characterized by a concentration gradient of the oxidized ion. Diffusion of the reducing agent ion through the boundary layer controls the redox reaction. The quiescent solution layer can be maintained until the reducing agent ion in the solution layer is substantially depleted.

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