

Title (en)

MOLECULAR LAYER DEPOSITION OF THIN FILMS WITH MIXED COMPONENTS

Title (de)

MOLEKULARSCHICHTABLAGERUNG VON DÜNNFILMEN MIT GEMISCHTEN KOMPONENTEN

Title (fr)

DEPOT DE COUCHE MOLECULAIRE EN FILMS MINCES AVEC DES COMPOSANTS MELANGES

Publication

EP 1523763 A4 20081224 (EN)

Application

EP 03748943 A 20030716

Priority

- US 0322236 W 20030716
- US 39702902 P 20020718

Abstract (en)

[origin: WO2004010469A2] Atomic layer deposition methods for depositing conformal homogeneous multi-component films on substrates are provided. In one method, a pulse of multi-metallic molecular precursor is introduced into a deposition chamber where a substrate is located. The multi-metallic molecular precursor contains the metallic elements necessary to form a mono-layer of the multi-metallic film. In another method, a mixture of two or more metallic precursors is pulsed into a deposition chamber where a substrate is located. The mixture of metallic precursors contains the metallic elements necessary to form a mono-layer of the multi-metallic film. In both methods, subsequent reactants are pulsed into the chamber to convert the precursors into the desired mono-layer. The cycle is repeated as many times as necessary to achieve a film of desired thickness. Illustrative films that may be formed by these processes include metallic alloy films, multi-metallic oxide films, multi-metallic nitride films and multi-metallic oxynitride films. By introducing the multiple metallic components in a single pulse in per cycle, throughput is increased. In addition, by introducing the multiple metallic components in a single pulse, a homogeneous film is formed that does not require subsequent annealing.

IPC 1-7

H01L 21/31; **C23C 16/00**

IPC 8 full level

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CPC (source: EP US)

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Citation (search report)

- [XA] US 2002013487 A1 20020131 - NORMAN JOHN ANTHONY THOMAS [US], et al
- [A] HUYANG XIE ET AL: "EPITAXIAL LITAO3 THIN FILM BY PULSED METALORGANIC CHEMICAL VAPOR DEPOSITION FROM A SINGLE PRECURSOR", APPLIED PHYSICS LETTERS, AIP, AMERICAN INSTITUTE OF PHYSICS, MELVILLE, NY, vol. 63, no. 23, 6 December 1993 (1993-12-06), pages 3146 - 3148, XP000414073, ISSN: 0003-6951
- See references of WO 2004010469A2

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