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(54) Title: EPITAXIAL GROWTH OF ALUMINUM ON ALUMINUM-NITRIDE COMPOUNDS

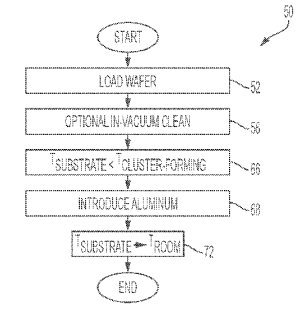


FIG. 5

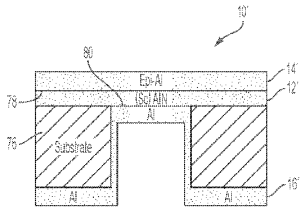


FIG. 6B

(57) Abstract: Apparatus and associated methods relate to forming an epitaxial layer of aluminum (14') on an aluminum-nitride compound (12'). The aluminum is epitaxially grown on the crystalline aluminum- nitride compound by maintaining temperature of a crystalline aluminum-nitride compound below a cluster-favoring temperature threshold within a vacuum chamber. Then, the crystalline aluminum- nitride compound is exposed to atoms of elemental aluminum for a predetermined time duration. The aluminum is epitaxially grown in this fashion for a predetermined time duration so as to produce a layer of epitaxial aluminum of a predetermined thickness. Such epitaxially-grown mono-crystalline aluminum has a lower resistivity than poly-crystalline aluminum. The resulting structure is used for a BAW resonator (10') wherein the epitaxial aluminum layer (14') serves as top electrode and the crystalline aluminum-nitride compound (12 ') as piezoelectric layer. The bottom aluminum electrode (16') may be polycrystalline.

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