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(54) Title: COMPOSITIONS AND METHODS FOR THE ELECTRODEPOSITION OF NANOTWINNED COPPER



Fig. 9

(57) Abstract: A copper electrolyte comprising a copper salt, a source of halide ions, and a linear or branched polyhydroxyl. The copper electrolyte is used to deposit copper having a high density of nanotwinned columnar copper grains on a substrate. The linear or branched polyhydroxyl may comprise a reaction product between 2,3-epoxy-1-propanol and an amine compound. A leveler comprising a polymeric quaternary nitrogen species and/or an accelerator comprising an organic sulfur compound may also be added to the copper electrolyte so long as the nanotwinned columnar copper grains are maintained.

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