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Preferred orientation of electroplated copper films on roll-annealed copper substrates

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Roll-annealed (RA) copper foils are commonly used in the printed circuit industry as flexible conductive base materials. The RA process produces foils with the crystallites aligned in particular directions. RA foils used in applications have either $\{100\}<001>$ “cube” texture, or a mixture of $\{112\}<111>$ “copper”, $\{123\}<634>$ “s” and “cube” textures. Manufacturing circuits requires the deposition of electroless and galvanic Cu layers on the RA foils. The substrate texture can lead to growth of large epitaxial crystals with a rough surface, which causes problems in subsequent processing steps. We show that with an appropriately designed electroless Cu interlayer, the deposit texture is sufficiently suppressed and a smooth galvanic layer is obtained. We present XRD pole figure based analysis of substrates and electroless/galvanic deposits.

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