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(54) Title: COPPER DEPOSITION IN WAFER LEVEL PACKAGING OF INTEGRATED CIRCUITS

(57) Abstract: An electrodeposition composition comprising: (a) a source of copper ions; (b) an acid; (c) a suppressor; and (d) a leveler, wherein the leveler comprises a quaternized dipyrindyl compound prepared by reacting a dipyrindyl compound with a difunctional alkylating agent or a quaternized poly(epihalohydrin). The electrodeposition composition can be used in a process for forming a copper feature over a semiconductor substrate in wafer level packaging to electrodeposit a copper bump or pillar on an underbump structure of a semiconductor assembly.

