

(51) International Patent Classification:
C23C 18/40 (2006.01)(21) International Application Number:
PCT/EP2024/080188(22) International Filing Date:
25 October 2024 (25.10.2024)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY,

(54) Title: ELECTROLESS, NICKEL-FREE COPPER PLATING SOLUTION AND METHOD USING THE SOLUTION

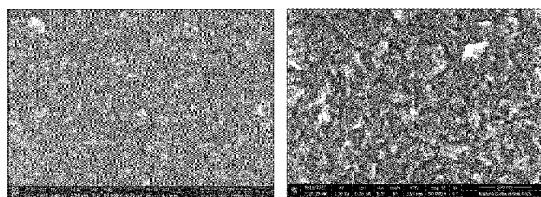
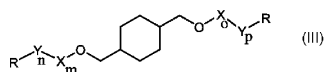
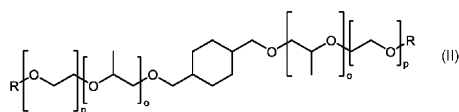
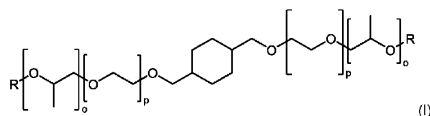


Fig. 3



(57) **Abstract:** The invention relates to an electroless, aqueous copper plating solution for thin copper plating, comprising or consisting of: • - a source of copper ions; • - a reducing agent selected from the group consisting of formaldehyde, glyoxylic acid, and a source thereof; • - a source of tartrate ions as complexing agent; • - a modifier agent, selected from the group consisting of an EO-PO- block-copolymer comprising EO- and PO-units according to formula (I), a PO-EO-block-copolymer comprising EO- and PO-units according to formula (II), and an EO-/PO-random-copolymer according to formula (III), wherein X and Y are randomly and independently selected EO- or PO-units, wherein at least one EO- and PO-unit is present in formula (III), and mixtures of said polymers thereof, wherein • - R is hydrogen or C₁-Cs-alkyl, • - m, n, o, and p are independently selected integer from

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MA, MD, MG, MK, MN, MU, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, ME, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- in black and white; the international application as filed contained color or greyscale and is available for download from PATENTSCOPE

1 - 20; • - having a pH value from 12 - 14; and the solution does not contain nickel ions and any other complexing agent; and a method to use the solution.