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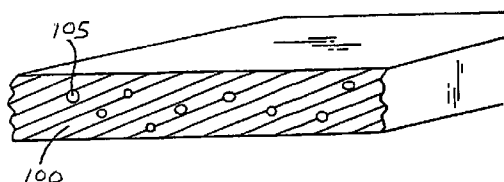
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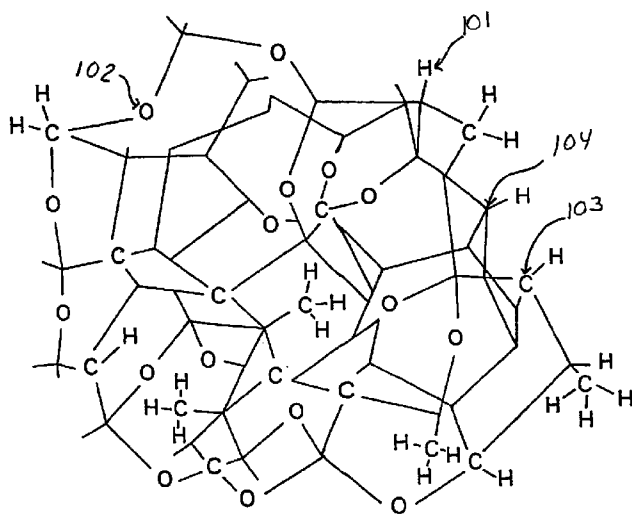
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(54) Title: **ULTRA LOW K (ULK) SICOH FILM AND METHOD**



A



B

(57) Abstract: The present invention provides a multiphase, ultra low k film exhibiting improved elastic modulus and hardness, and various methods for forming the same. The multiphase, ultra low k dielectric film includes atoms of Si, C, O and H, represented by (104), (103), (102) and (101) respectively, has a dielectric constant of about 2.4 or less, nanosized pores or voids, an elastic modulus of about 5 or greater and a hardness of about 0.7 or greater. A preferred film includes atoms of Si, C, O and H, has a dielectric constant of about 2.2 or less, nanosized pores or voids, an elastic modulus of about 3 or greater and a hardness of about 0.3 or greater. These films consist of a first phase (100) of "host" matrix that is a random network of hydrogenated oxidize silicon carbon material (SiCOH), and a second phase (105) consisting essentially of C and H atoms.



GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations* AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD,

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