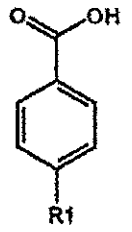
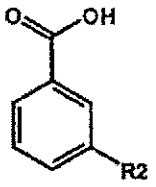
**Claims**

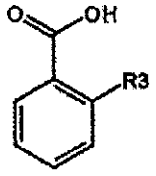
1. Use of a chemical mechanical polishing (CMP) composition (Q) for chemical mechanical polishing of a substrate (S) comprising (i) cobalt and/or (ii) a cobalt alloy, wherein the CMP composition (Q) comprises
   (A) Inorganic particles, wherein inorganic particles are colloidal or fumed inorganic particles or a mixture thereof, selected from alumina, ceria, copper oxide, iron oxide, nickel oxide, manganese oxide, silica, silicon nitride, silicon carbide, tin oxide, titania, titanium carbide, tungsten oxide, yttrium oxide, zirconia, or mixtures or composites thereof;
   (B) a substituted aromatic compound with at least one carboxylic acid function of the general formula 1 to 5 as corrosion inhibitor



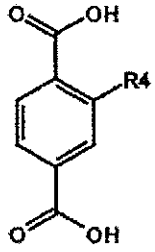

(1)



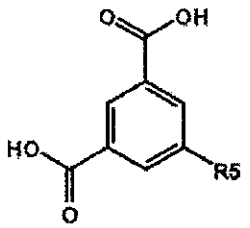

(2)




(3)




(4)




(5)

wherein $R^1$ $R^2$, $R^3$, $R^4$ and $R^5$ are independently from each other H, hydroxy, alkyl, amino, aryl alkylamino, alkylarylamino, benzylamino, alkylsulfonyl, sulfonic acid, sulfonate, thio or alkylthio

(C) at least one amino acid;
(D) at least one oxidizer, and
(E) an aqueous medium, and

wherein the CMP composition (Q) has a pH of from 7 to 10.

2. Use of a CMP composition (Q) according to claim 1, wherein the inorganic particles (A) are colloidal inorganic particles.

3. Use of a CMP composition (Q) according to anyone of claims 1 to 2, wherein the colloidal inorganic particles are silica particles.

4. Use of a CMP composition (Q) according to anyone of the claims 1 to 3, wherein the substituted aromatic compound with at least one carboxylic acid function (B) is at least one of the general formula 1 to 5 and wherein $R^1$ is amino, mono-alkylamino, di-alkyamino, carboxyl, alkythio or alkylsulfonyl, $R^2$ is amino, mono-alkylamino di-alkyamino or carboxyl, $R^3$ is benzylamino, $R^4$ is amino, mono-alkylamino, di-alkyamino and $R^5$ is amino, carboxyl or alkyl.

5. Use of a CMP composition (Q) according to anyone of the claims 1 to 4, wherein the substituted aromatic compound with at least one carboxylic acid function (B) is at least one of the general formula 1 to 5 and wherein $R^1$ is amino, mono-methylamino, di-methylamino, di-ethylamino, carboxyl or methylsulfonyl, $R^2$ is amino, mono-methylamino, di-methylamino or carboxyl, $R^3$ is benzylamino, $R^4$ is amino, and $R^5$ is amino or carboxyl.

6. Use of a CMP composition (Q) according to anyone of the claims 1 to 5, wherein the total amount of the substituted aromatic compound with at least one carboxylic acid function (B) of one of general formula 1 to 5 is in the range of from 0.002 wt.-% to 0.15 wt.-% based on the total weight of the respective CMP composition.

7. Use of a CMP composition (Q) according to anyone of the claims 1 to 6, wherein the at least one amino acids (C) is glycine, alanine, leucine, valine, cysteine, serine and proline or a salt thereof.

8. Use of a CMP composition (Q) according to anyone of the claims 1 to 7, wherein the total amount of the at least one amino acid (C) is in the range of from 0.1 wt.-% to 2.25 wt.-% based on the total weight of the respective CMP composition.

9. Use of a CMP composition (Q) according to anyone of claims 1 to 8, wherein the oxidizer comprises a peroxide.

10. Use of a CMP composition (Q) according to anyone of claims 1 to 9, wherein the oxidizer is hydrogen peroxide.

11. A chemical mechanical polishing (CMP) composition comprising:

    (A) colloidal silica particles in a total amount of from 0.01 wt.-% to 3 wt.-% based on the total weight of the respective CMP composition
    (B) at least one substituted aromatic compound with at least one carboxylic acid function (B) selected from the group consisting of isophathalic acid, terephthalic acid, 2-aminoterephthalic acid, 4-methylamino benzoic acid, 4-(dimethylamino)benzoic acid, 4-methylsulfonyl benzoic acid, trimesic acid, 3-methylamino benzoic acid, 4-(diethylamino)benzoic acid, 3-dimethylamino benzoic acid and 2-(benzylamino)benzoic acid in a total amount of from 0.002 wt.-% to 0.1 wt-% based on the total weight of the respective CMP composition
    (C) at least one amino acids (C) selected from the group consisting of glycine, alanine, leucine, valine, cysteine, serine and proline or a salt thereof, in a total amount of from 0.2 wt.-% to 0.9 wt.-% based on the total weight of the respective CMP composition
    (D) hydrogen peroxide in a total amount of from 0.2 wt.-% to 2 wt.-% based on the total weight of the respective CMP composition.
    (E) an aqueous medium,

    wherein the CMP composition (Q) has a pH of from 7 to 10.

12. A process for the manufacture of a semiconductor device comprising the chemical mechanical polishing of a substrate (S) used in the semiconductor industry wherein the substrate (S) comprises
    (i) cobalt and/or
    (ii) a cobalt alloy
    in the presence of a CMP composition (Q) as defined in anyone of the claims 1 to 11.

13. The process according to claim 12, wherein the static etch rate (SER) of cobalt is below 100 Å/min.

14. The process according to anyone of the claims 12 to 13, wherein the cobalt material removal rate (MRR) is adjusted to a range of from 300 to 7200 Å/min.