CLAIMS

1. An electrode suitable for electrochlorination processes comprising a valve metal substrate and at least one active layer comprising a catalytic composition of ruthenium, titanium and at least a first doping agent X or oxides thereof, wherein ruthenium is between 20-50%, titanium is equal or below 79,5% and X is between 0,5-7% expressed in weight percentage referred to the elements, X being selected from the group consisting of scandium, strontium, hafnium and combinations of at least two of scandium, strontium, hafnium, bismuth, zirconium, aluminium.

2. The electrode according to claim 1 wherein the catalytic composition comprises 27-35% of ruthenium, 71% or less of titanium and 2-3% of X.

3. An electrode suitable for electrochlorination processes comprising a valve metal substrate and at least one active layer comprising a catalytic composition of ruthenium, titanium and at least a first doping agent X or oxides thereof and a second doping agent Y or oxides thereof, wherein ruthenium is between 20-50%, titanium is equal or below 79,3%, X is between 0,5-7% and Y is between 0,2-3,2%, expressed in weight percentage referred to the elements, X being selected from the group consisting of scandium, strontium, hafnium, bismuth, zirconium, aluminium and combinations thereof , Y being selected from the group consisting of copper, rhodium, platinum, iridium and combinations thereof.

4. The electrode according to claim 3 wherein the catalytic composition comprises 27-35% of ruthenium, 70,4% or less of titanium, 2-3% of X, and 0,6-1,7% of Y.

5. The electrode according to claim 3 or 4 wherein the catalytic composition further comprises 0,2-2,2% of a third doping agent Z or its oxides, Z being palladium.

6. The electrode according to claim 5 wherein the catalytic composition comprises 27-35% of ruthenium, 69,9% or less of titanium, 2-3% of X, and 0,6-1,7% of Y and 0,5-1,4% of Z.

7. The electrode according to any one of claims 3-6 where Y is rhodium.

8. The electrode according to any one of claims 3-6 where X is scandium and Y is rhodium, X is scandium and Y is copper, X is bismuth and Y is rhodium, X is bismuth and Y is copper, or X is zirconium and Y is rhodium.

9. Method for manufacturing an electrode according to any one of claims 1 to 8 comprising applying a solution comprising precursors of ruthenium, titanium and at least of said doping agent X to a valve metal substrate and subsequently decomposing said solution by a thermal treatment in air at a temperature between 450°C-500°C.

10. The method according to claim 9, wherein said solution further comprises at least precursors of said doping agent Y.

11. The method according to claim 10, wherein said solution further comprises precursors of said doping agent Z.

12. Process for hypochlorite mediated water disinfection comprising the following steps:
    - flowing an aqueous solution containing NaCl between two opposite electrodes, where at least one of said two opposite electrodes is the electrode according to any one of claims 1 to 8,
    - applying an external voltage between said two opposite electrodes thereby producing hypochlorite in said aqueous solution.