

Title (en)

MESOSTRUCTURED SKINS FOR APPLICATION IN THE AERONAUTICS AND AEROSPACE INDUSTRIES

Title (de)

MESOSTRUKTURIERTE HÜLLEN ZUR ANWENDUNG IN DER LUFT- UND RAUMFAHRTINDUSTRIE

Title (fr)

REVETEMENTS MESOSTRUCTURES POUR APPLICATION EN AERONAUTIQUE ET AEROSPATIALE.

Publication

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Application

**EP 07848356 A 20070921**

Priority

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- FR 0608614 A 20061002

Abstract (en)

[origin: FR2906539A1] Structure comprises a mesostructured layer prepared by sol-gel method from a metallic molecular precursor of alkoxide or metal halide, in the presence of an amphiphilic surfactant and a metallic substrate. Structure comprises a mesostructured layer prepared by sol-gel method from a metallic molecular precursor of alkoxide or metal halide of formulae  $MZ_n$  (I),  $(R_1)_x MZ_{n-x}$  (II),  $(L(m))_x MZ_{n-mx}$  (III) or  $(RO)_n - 1M - (R_2)_m - (OR)_n - 1$  (IV), in the presence of an amphiphilic surfactant and a metallic substrate. M : Al (III), Ce (III), Ce (IV), Zr (IV), Sn (IV), Nb (V), V (V), Ta (V), Hf (V) or a rare earth (the figure between bracket is valency of the atom (M)), preferably Al (III), Ce (III), Ce (IV), Zr (IV), Nb (V), Y (III), La (III) or Eu (III); n : valency of (M); x : 1-n-1; Z : halo or -OR; R : 1-4C alkyl, preferably methyl or ethyl; R 1 non-hydrolyzable group comprising 1-4C alkyl, 2-4C alkenyl, 2-4C alkynyl, 6-10C aryl, methacryl or methacryloxy(1-10C alkyl), epoxy-1-10C alkyl or epoxy-1-10C alkoxy-1-10C alkyl, 2-10C haloalkyl, 2-10C perhaloalkyl, 2-10C mercaptoalkyl, 2-10C aminoalkyl, (2-10C aminoalkyl)amino(2-10C alkyl), di(2-10C alkylene)triamino(2-10 alkyl) or imidazolyl(2-10C alkyl), preferably methyl, ethyl, propyl, butyl, vinyl, 1-propenyl, 2-propenyl, butenyl, acetylenyl, propargyl, phenyl, naphthyl, methacryl, methacryloxypropyl, glycidyl, glycidyloxy(1-10C alkyl), 3-chloropropyl, perfluoropropyl, mercaptopropyl, 3-aminopropyl, 3-[(2-aminoethyl)amino]propyl or 3-[diethylenetriamine]propyl; L : mono or polydenatate, preferably polydentate complexing ligand; m : hydroxylation index of the ligand L, preferably carboxylic acid, beta -diketone, beta -keto ester, alpha or beta -hydroxy acid, amino-acid, polyamine, phosphonic acid or phosphonate; and R 2 non-hydrolyzable group comprising 1-12C alkylene, N,N-di(2-10C alkylene)amino, bis[N,N-di(2-10C alkylene)amino], 2-10C mercaptoalkylene, (2-10C alkylene)polysulfide, 2-4C alkenylene, 6-10C arylene, di(2-10C alkylene)-6-10C arylene or N,N'-di(2-10C alkylene)ureido, preferably methylene, ethylene, propylene, butylene, hexylene, octylene, decylene, dodecylene, N,N-diethyleneamino, di[N(3-propylene)-N-methyleneamino], mercaptopropylene, propylene-disulfide, propylenetetrasulfide, vinylene, phenylene, di(ethylene) phenylene or N,N'-dipropyleneureido. An independent claim is included for the preparation of the structure comprising preparation of a sol-gel material by hydrolysis-condensation of the metallic molecular precursors (I)-(IV) optionally in combination with a precursor based on silicon as silicon alkoxide, organoalkoxysilane or silicon halide i.e. (V)-(VIII), in aqueous or water/alcohol medium, in the presence of an amphiphilic surfactant and optionally a functionalizing agent, deposition of the obtained material on a metal substrate, treating the covered substrate, thermally, chemically and/or using UV treatment to densify the network, followed by washing, optionally eliminating the surfactant molecules by thermal treatment and/or chemical extraction and optionally functionalization.

IPC 8 full level

**C09D 1/00** (2006.01); **C09D 4/00** (2006.01); **C09D 5/08** (2006.01)

CPC (source: EP US)

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Citation (search report)

See references of WO 2008040895A2

Citation (examination)

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