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) xMZ n - x (II), (L(m)) xMZ n - m x (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 1non-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 2non-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)

C09D 1/00 (2013.01 - EP US); **C09D 4/00** (2013.01 - EP US); **C09D 5/08** (2013.01 - EP US); **C09D 183/14** (2013.01 - EP US); **C23C 18/1208** (2013.01 - EP US); **C23C 18/122** (2013.01 - EP US); **C23C 18/1241** (2013.01 - EP US); **C23C 18/1254** (2013.01 - EP US); **C23C 18/143** (2019.04 - EP US); Y02T 50/60 (2013.01 - US); Y10T 428/249961 (2015.04 - EP US); Y10T 428/31663 (2015.04 - EP US)

Citation (search report)

See references of WO 2008040895A2

Citation (examination)

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