

Title (en)
MANUFACTURING OF ORGANIC-INORGANIC COMPLEX HALIDE FILMS

Title (de)
HERSTELLUNG VON ORGANISCH-ANORGANISCHEN KOMPLEXEN HALIDFILMEN

Title (fr)
FABRICATION DE FILMS D'HALOGÉNURES COMPLEXES ORGANIQUES-INORGANIQUES

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Application
EP 21856940 A 20211223

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Abstract (en)
[origin: WO2022139632A1] The claimed invention relates to the field of materials science, namely, to methods of manufacturing of films made of crystalline materials. The crystalline material film obtained by the claimed method can be used, for example, in optoelectronic devices based on semiconductors, in particular, in solar cells. The technical result achieved by using this invention is improvement of homogeneity of the obtained films of organic-inorganic complex halides by reducing the number of pinholes and reduction of the surface roughness of the film, which contributes to improvement of overall quality of the films as a light-absorbing material in thin-film solar cells. The claimed technical result is achieved via the improved method of producing the film of organic-inorganic complex halide with a perovskite-like structure which include the following stages: (I) formation a layer of reagent B or B' on the carrier substrate; II) bringing the layer of reagent B or B' into interaction with reagents AX and X2; III) providing the reactive conversion course of the applied reagents; therefore in order to implement stage II, the film, obtained at stage I, is immersed into a solution of the mixture of reagents AX and X2 in an organic solvent, and is kept in the solution until the reactive conversion is completed to ensure the correct course of reaction $B/B' + AX + X2 \rightarrow AnBX(nz+k) + Y'$, where B is representing the metal, B' is representing the oxide or salt of B, AX is representing organic or inorganic halide, X2 is representing molecular halogen, $AnBX(nz+k)$ is representing organic-inorganic complex halide (OICH), Y' is a reaction side-product, $z = 1, 2$; $k = 2, 3, 4$; $n = 0 \div 4$, including 19 claims, 3 tables, 4 figures.

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