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NANOMETRIC SnO_2 LAUERS FOR PHOTOVOLTAIC STRUCTURES

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The technology of Sb doped SnO_2 thin layers growth and the results of their electrical and optical properties, from the consideration of the possibility of their using in solar cells fabrication, are brought in the paper.

Sb doped SnO_2 layers were deposited by pulverization on to surfaces of the area up to 80cm^2. A solution of $SnCl_4$:$5H_2O$ dissolved in 0,5M molarity ethyl alcohol was used for the deposition of SnO_2 layers. A solution of antimony trichloride ($SbCl_3$) dissolved in 0,1M molarity ethyl alcohol was used as a dopant. The substrate temperature in the furnace during deposition was maintained at 450°C±0,5°C. The layers were grown in an oxygen ambience at a flow pressure through the pulverizer of 40 kPa. The glass plates were used as substrates.

The properties of the grown SnO_2 layers depend on the technological conditions of the layer deposition. Studies of the optical transmittance spectral dependence of SnO_2 layers in the spectral region from 250nm to1000nm had shown that transmittance decreases from 85% to 70% at a constant volume of $SnCl_4$+ ethyl alcohol of 10ml, when $SbCl_3$+ethyl alcohol dopant quantity in pulverized solution inceases from 0 to 3ml.. The charge carriers concentration in the layers reaches the values of 5.10^{20} cm^{-3} for a volume of 1 ml of $SbCl_3$+ethyl alcohol in the pulverized solution and remains constant at the increase of the dopant volume. The Sn doped SnO_2 layers resistivity decreases at the dopant quantity increase in the pulverized

solution and it reaches the values of $(3...50)\cdot 10^{-3}$ Ohm·cm and remains the same for the quantities more than 1 ml of $SbCl_3$+ethyl alcohol in the pulverized solution. Sb doping of SnO_2 layers significantly decreases their resistivity which facilitates their using in photo-voltaics.