Obtaining of ZnMnTe/ZnMnTeO structures by RBQE technological method

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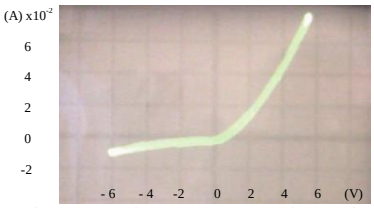
The maximum of power of solar cells (based on narrow-gap semiconductors) efficiency is 31%. Theoretical and experimental investigation shows, that properties of ZnMnTeO gives perspective to production of solar cells with high efficiency (56-63%) [1-3]. The absorption edges (~0.73, 1.83 and 2.56 eV) of ZnMnTeO cover the entire solar spectrum.

Obtaining of ZnMnTeO material is possible with implantation of oxygen in ZnMnTe sample. After implantation sample is treated by using of pulsed laser deposition method. This technological process leads to very high net cost of ZnMnTe:O material, which hinders the of this invention into the solar cell industry.

Thus, it is necessary to be used of a new technology method, which successfully replaced the used technology. We resolved method of Radical Beam Quasiepitaxy (RBQE), which effectively regulates wide-gap semiconductors properties [4-9]. The experiments carried out showed that under treatment of ZnMnTe by RBQE we were obtained p-i-n with the basic of ZnMnTe/ZnMnTeO structure.

We investigated photoconductivity in ZnMnTeO samples (irradiated with xenon lamp 150W). The distance from light source to samples was 20 cm and working voltage – 5 V.



I-V characters of p-i-n structure obtained on the basic of ZnMnTe/ZnMnTeO(sample 4).

Number of sample	RBQE treatment temperature and time (°C) (h)	Photo conductivity before irradiation (mkA)	Photo conductivity after irradiation (mkA)
1.	300 - 3	50	65
2.	300 - 4	20	30
3.	350 - 3	5	20
4.	350 - 4	15	35

Thus, to obtain of ZnMnTeO by RBQE method shows the advantages of RBQE technological method that the technology used until now and shows us the perspective of the RBQE method of high effective (Ef=56%-63%) solar cells industry.

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