

«Nanostructured surface»

Topology of surfaces of ZnO thin oxide films formed on GaSe layered crystals surfaces

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Zinc oxide (ZnO) is one of the most promising transparent oxides and have n-type conductivity. Recently, particular interest is the practical use of ZnO as a wide-gap "window" to create heterojunctions.

The van der Waals surface of GaSe layered crystals allows their use as substrates for growing nanostructures and creating heterojunctions based on semiconductor materials with different symmetry and lattice period [1].

ZnO thin oxide films were deposited on the van der Waals surfaces of GaSe layered crystals by magnetron sputtering. X-ray imaging heterostructure of n-ZnO – p-GaSe shown that the lattice parameters of the GaSe substrate are: $a = 3,7542 \text{ \AA}$, $c = 15,9526 \text{ \AA}$, and ZnO films have a hexagonal structure with the following lattice parameters: $a = 3,242 \text{ \AA}$, $c = 5,1880 \text{ \AA}$.

Topology of surfaces of ZnO thin oxide films formed on GaSe layered crystals surfaces were studied by using AFM-images. ZnO film has a granular structure; the oxide molecules are combined particles in dome-shaped association. The density of these agglomerations is quite high, but their sizes are within 10-100 nm.

Photosensitivity spectrum of n-ZnO – p-GaSe heterojunctions is within 2.0 - 3.0 eV.

1. V.M. Katerynychuk, A.I. Savchuk. Diffraction properties of the nanostructured surface// Nanoscience and Nanotechnology. – 2012. – V.12, №11, – P. 8856 - 8859.