

Properties Of Porous Arsenide of Gallium

V.V.Kidalov¹, G.A.Sukach²,
A. S. Revenko¹, A.D. Bajda¹,

¹ Berdyansk state pedagogical university,

² Institute of physics of semiconductors NAN of Ukraine,
phone: +38-06153-63373, the Fax: +38-06153-71399,
E-mail:kid@bdpu.org

Low dimensional CaAs structures such as quantum strings and quantum points draw more and more steadfast attention of researchers last years as a subject for scientific researches and as a perspective material for devices with new potential opportunities. In work [1] the opportunity of use porous GaAs as anti-reflecting covering for solar elements on basis CaAs is shown. By the MBE method quantum points InCaAs and InS on porous CaAs were received. In result of nitridation porous substrates CaAs qualitative film CaN cubic and hexagonal [2] structure (depending on orientation of a substrate) were obtained. Thus, area of using of porous CaAs in the last time has sharply increased. In the present work the photoluminescence of the superficial layers formed as a result of electrochemical etching GaAs is investigated. Researches of spectra of a photoluminescence shows shift of an own infra-red photoluminescence in long-wave area. It is possible to explain this fact if to assume, that quantization of energy of carriers of a current takes place as a result of formation on nanostructures. From this measurements the size crystallites was appreciated about $20 \cdot 10^{-9}$ m. The superficial structure also was investigated with the help of scanning electronic microscope. As a result of proceeding corresponding data the size crystallites was appreciated in region near $28 \cdot 10^{-9}$ m. Thus, in the present works the technique of obtaining of nanoporous layers of CaAs are discussed.

REFERENCES

1. V.V. Mamutin, V.P. Ulik, V.V. Tretyakov, S.V. Ivanov, S.G. Konnikov, P.S. Kop'ev. //Letter in JTF, 25(1), 3(1999).
2. Valery V. Kidalov, Georgy A. Sukash, Andrey S. Revenko, Artem D. Bayda . Nitridation Of Porous GaAs (111) The 5th International Symposium on Blue Laser and Light Emitting Diodes Semiconductors Physics Research centry 15-19 March 2004 Korea.
3. V.V. Kidalov, G.A. Sukach, A.O. Petukhov, A.S. Revenko, E.P. Potapenko. Photoluminescent properties of CaN thin films obtained by thermal annealing porous CaAs (001) substrates with active nitrogen radicals.//Journal of luminescence, 102-103 (2003) 712-714.