

2001, Vol. 78, Nr. 8, pag. 1074-1076

Observation of crossing pores in anodically etched n-GaAs

Langa S., Carstensen J., Christophersen M., Föll H.,
Tiginyanu I. M.

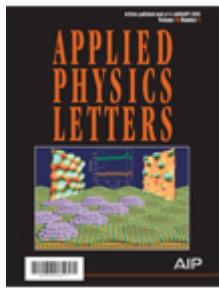
<https://doi.org/10.1063/1.1350433>

Abstract

Pores in GaAs in the micrometer range and oriented in $|111|$ directions have been observed during the anodization of GaAs in aqueous HCl electrolytes. A direct evidence of pores intersection is presented which is a very promising feature for three-dimensional micro- and nanostructuring of III-V compounds for the production of photonic materials.

References

1. U. Grüning, V. Lehmann, S. Ottow, and K. Busch, *Appl. Phys. Lett.* **68**, 747 (1996).
2. F. M. Ross, G. Oskam, P. C. Searson, J. M. Macaulay, and J. A. Liddle, *Philos. Mag. A* **75**, 525 (1997).
3. P. Allongue, C. Henry de Villeneuve, L. Pinsard, and M. C. Bernard, *Appl. Phys. Lett.* **67**, 941 (1995).
4. E. Yablonovitch, T. J. Gmitter, and K. M. Leung, *Phys. Rev. Lett.* **67**, 2295 (1991).
5. P. Schmuki, L. E. Erickson, D. J. Lockwood, J. W. Fraser, G. Champion, and H. J. Labbe, *Appl. Phys. Lett.* **72**, 1039 (1998).
6. I. M. Tiginyanu, C. Schwab, J.-J. Grob, B. Prevot, H. L. Hartnagel, A. Vogt, G. Irmer, and J. Monecke, *Appl. Phys. Lett.* **71**, 3829 (1997).
7. M. N. Ruberto, X. Zhang, R. Scarmozzino, A. E. Willner, D. V. Podlesnik, and R. M. Osgood, *J. Electrochem. Soc.* **138**, 1174 (1991).
8. H. Föll, *Appl. Phys. A: Solids Surf.* **53**, 8 (1991).
9. X. G. Zhang, *J. Electrochem. Soc.* **138**, 3750 (1991).



2001, Vol. 78, Nr. 8, pag. 1074-1076

10. B. H. Erne, D. Vanmaekelbergh, and J. J. Kelly, *J. Electrochem. Soc.* **143**, 305 (1996).
11. P. C. Searson, J. M. Macaulay, and F. M. Ross, *J. Appl. Phys.* **72**, 253 (1992).
12. H. Gerischer, P. Allongue, and V. Costa Kieling, *Ber. Bunsenges. Phys. Chem.* **97**, 753 (1993).
13. J. Carstensen, M. Christophersen, and H. Föll, *Mater. Sci. Eng., B* **69–70**, 23 (2000).