

ZnSe-based conductive nanotemplates for nanofabrication

**Monaico Eduard, Tighineanu Petru, Langa Sergiu,
Hartnagel Hans L., Tiginyanu Ion**

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Abstract

We show that anodic etching of n-type ZnSe crystalline substrates leads to the formation of pores which, after nucleation at surface defects, prove to follow the current lines, exhibiting multiplication until the front of the porous network covers the whole available space. No growth of crystallographically oriented pores has been observed in ZnSe. The formation of multilayer porous structures is realized, including layers subjected to successive porosification at two different length scales. The electrochemical pulsed deposition of arrays of Pt nanotubes in the porous ZnSe matrix is demonstrated. The obtained results show that porous ZnSe structures are promising for use as conductive and optically transparent nanotemplates for nanofabrication, in particular for the important application of metal nanotubes.