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Abstract
This study is concerned about using anodic oxidation method to form nano porous structure on the aluminum thin film, which is sputtered on the substrate. This porous structure can be worked as template mold to fill in semiconductor, oxidation, and metal materials by the following methods such as Electro Deposition process and Chemical Vapor deposition process. If the nanoporous aluminum oxidation film can be removed by chemical etching, the array structure on the substrate such as nano tube, nano fiber, nano rod etc can be fabricated, and get the perpendicular nano structure on the substrate. This research of electro chemical method is a kind of electro chemical method that can form aluminum oxidation on aluminum at anode. By properly controlled the following parameters such as the concentration of acid electrolyte, the temperature of electrolyte, the voltage, and the time during the anodic treatment process. The electrolyte can dissolve the aluminum oxidation film to produce nano porous structure with different pore size, pore distribution, pore aspect ratio and pore surface character, because the sputtered aluminum film is not uniform on the substrate. The pore size of the fabricated template must be controlled in nano scale (<100nm), so is called nano structure template. The array structures developed in this study may be applied to optical, heat transfer, mechanical and magnetic materials.
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