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Alignment of Ag nanowires on glass sheet by dip-coating technique

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Abstract

Thin film with highly-oriented Ag nanowires on glass surface was prepared by a dip-coating technique from a Polyvinylpyrrolidone/ethanol solution. Ag nanowires were firstly prepared by seed mediated method, and then dispersed in solution by mechanical and ultrasonic dispersion. The alignment of the Ag nanowires mainly depends on the concentration of the polyvinylpyrrolidone (PVP) and the pulling speed during dip-coating. It is observed that there is obvious optical polarizing performance in the 1400-1900 nm wavelength range. This approach is expected to offer a low-cost preparation method for large-scaled assembly of functional nanoscale electronic and photonic structures.

Key words

Ag nanowires; Dip-coating; polarizing property ;highly-oriented; nanoscale structures

1. Introduction

One-dimensional metallic nanomaterials have caught much attentions for their distinctive optical, electromagnetic, chemical properties and thermal stability [1-3]. In addition, the

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