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技术及应用

重离子径迹模板中组装半导体CdS一维纳米材料

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摘要 用重离子辐照的聚碳酸酯为模板，采用电化学沉积法制备了半导体CdS纳米线和纳米管。通过选用不同蚀刻时间的模板，得到了直径20～100 nm、长度20～30 μm范围、粗细均匀且具有纤维锌矿结构的CdS纳米线与纳米管。利用扫描电子显微镜(SEM)、X射线衍射(XRD)和透射电子显微镜(TEM)对CdS纳米线与管的形貌和晶体结构特征进行了表征。

关键词 硫化镉 _ 纳米线 _ 纳米管 _ 电化学沉积

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Semiconductor CdS One-Dimensional Nanostructures in Ion-Track Templates

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Abstract CdS nanowires and nanotubes were prepared by electrodeposition method in etched ion-track polycarbonate (PC) templates. By using the templates with different pore sizes, cylindrical CdS nanowires and nanotubes were obtained with the diameter between 20 and 100 nm, and hexagonal polycrystalline in nature. The morphology and crystallinity of the CdS nanowires and nanotubes were studied by means of scanning electron microscopy (SEM), X-ray diffraction (XRD), and transmission electron microscopy (TEM). The one-dimensional semiconductor nanostructure with controlled dimension can be easily synthesized in etched ion-track templates.

Key words CdS _ nanowires _ nanotubes _ electrochemical deposition

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