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研究论文

基于双带模型的螺旋炭纤维电导特性

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摘要: 采用电子结构的双带模型研究了螺旋炭纤维的电导特性。结果表明: 经石墨化处理后,原始制备态的螺旋炭纤维的晶格趋于完美, 其双带模型的电子能带结构由费米能级压低的p型转变为反应有序结构的n型; 载流子浓度的提高和移动度的明显增大使石墨化后的螺旋炭纤维电导行为明显改善。

关键词: 无机非金属材料 螺旋炭纤维 电导特性 π电子双带模型 石墨化

Conductance Characteristics of Carbon Microcoil Based on a Two-band Model of π-electron

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Abstract: A simple two-band model of π-electron (STB) was used to analyze electrical conductance characteristics of carbon microcoil (CMC) in this paper. The research results showed that the as-grown CMC had a p-Type STB model with the Fermi-level depression and the graphitizated CMC had an n-Type STB model for high ordered degree structure. After graphitization, the crystal lattice tended to becoming perfect, and the electrical conductivity of CMC was evidently enhanced as a result of the increasing carrier concentration and carrier mobility.

Keywords: inorganic non-metallic materials carbon microcoil electrical conductance characteristics simple two-band model of π-electron graphitization

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