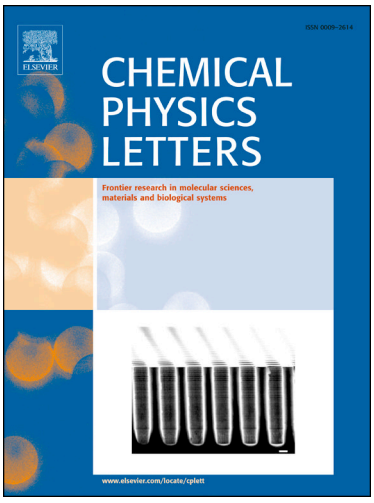

Research paper

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Principles of detection mechanism for adsorbed gases using carbon nanotube nanomat

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Abstract

In this study, we fabricated carbon nanotube films for application to gas sensors. We assumed that the ratio of electrical conductance change was equal to the surface coverage, and our detection model verified this assumption. To prove this assumption, we simulated the sheet resistance of a film with numerous joints. Our Monte Carlo simulations proved that when the joint resistance increased owing to molecular adsorption, the sheet resistance increased in accordance with the surface coverage.

Introduction

Unlike conventional semiconductor gas sensors, carbon nanotubes (CNTs)[1, 2] can detect gas molecules at room temperature. Hence, CNTs have been envisioned as a new material for gas sensors. Conventional semiconductor gas sensors utilize the change in

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