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| Title: | Electro - Mechanical and Electrical Characterisation of Cu ₂ SCdS nano structure using Atomic Force Microscopy |
| Authors: | Pandey, Mrityunjay (/jspui/browse?type=author&value=Pandey%2C+Mrityunjay) |
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| Abstract: | We report scanning probe microscopy experiments in multiple modes to probe functional electrical properties of the nano-meter scale heterostructures of Cu ₂ S and CdS. While piezo- response force microscopy experiments reveal weak electro-mechanical coupling in the heterostructures with a piezo-electric d ₃₃ coefficient measured to be 13 pc/N. Conductive AFM (atomic force microscopy) experiments indicate that the heterostructures can be used as active electronic circuit substitutes at extremely small length scales. In the study of electrical functionality where an electrical contact involving a single heterostructure and an AFM cantilever (Pt-Ir coated silicon nitride) behaves like an active differentiator circuit. Transient response of the circuit indicates strong evidence of the voltage dependence. The overall electrical properties reported here imply that the nano-heterostructures of Cu ₂ S and CdS could find application in nano-meter scale mechanical sensors, actuators and as active circuit components in nanoelectronics. |
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