Efek individualitas dopant terhadap karakteristik arus tegangan pada piranti pn junction berdimensi nanometer = effect of dopants individuality on current voltage i v characteristics in nanoscale pn junctions / Sri Purwiyanti

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Abstrak

[ABSTRAK
Sampai saat ini studi tentang efek individualitas dopant terhadap karakteristik piranti berdimensi nanometer, hanya dilakukan pada piranti berstruktur MOSFET, tetapi tidak dilakukan pada struktur pn junction. Tujuan dari riset ini adalah menginvestigasi efek dari sebuah atom dopant (individualitas dopant) terhadap karakteristik arus-tegangan pada piranti pn junction Silikon berdimensi nanometer. Dua macam piranti pn junction dengan konsentrasi doping yang berbeda telah berhasil difabrikasi. Karakteristik arus-tegangan kemudian diobservasi pada berbagai suhu. Sebagai hasilnya, pada suhu rendah, ditemukan adanya fitur random telegraph signal (RTS) dan/atau fitur multi-tingkat, tergantung dari konsentrasi doping, yang merupakan efek dari adanya individualitas dopant terhadap karakteristik piranti pn junction.;
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ABSTRACT
So far, studies about effects of dopant individuality on characteristic of nanodevice have been done only for nanodevice in MOSFET structure, but not for pn junction structure. Purpose of this study is to investigate effects of dopants individuality on current-voltage (I-V) characteristics in nanoscale Si pn junction devices. Two types of devices, which have different doping concentration, have been fabricated. Then, I-V characteristics have been observed under several temperatures. As a result, at low temperatures, random telegraphs signal (RTS) and multistep features have been found, which caused by effect of dopants individuality on characteristics of pn junction device., So far, studies about effects of dopant individuality on characteristic of
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