

Properties of contact resistance towards realization of graphene-based three-branch junction device

Abstract

A three-branch junction (TBJ) nanowire device is shown to exhibit a unique nonlinear input-output characteristics. The effect of contact resistance on such characteristics is investigated. It is shown that metal contact having small contact resistance is required so that such nonlinear characteristics of TBJ device can be maintained. The graphene-based back-gated FET device structure and transmission line method are proposed and discussed in order to determine the contact resistance of metal/graphene interface. The preparation of graphene layer and its characterization using conventional methods are presented and discussed. These basic preliminary results provide useful guidance and information for the fabrication of actual devices which are on the way.