Grephene nanoribbons with end- and side-contacted electrodes

S. Krompiewski[a]

[a]Institute of Molecular Physics, Polish Academy of Sciences, ul. M. Smoluchowskiego 17, 60179 Poznań, Poland

This contribution reports on theoretical studies of electronic transport through graphene nanoribbons (GNR) in the two-terminal geometry. The method combines the Landauer-type formalism with Green's function technique within the framework of the standard tight-binding model. The aim of this study is to gain some insight on how fundamental electric current characteristics (conductance and shot noise) depend on interface conditions imposed by GNR/metal-electrode contact details. Calculations have been carried-out for both end- and side contact geometries, and metallic (zigzag-edge) as well as semiconducting (armchair-edge) GNRs. It turns out that results for side-contacted systems depend on the ratio between the free-standing GNR length to that covered by the electrode. Typically the results start converging when this ratio approaches one. In the case of ferromagnetic contacts, the giant magnetoresistance coefficient is also discussed.

9.7 cm

Work supported by the Polish Ministry of Science and Higher Education as a research project No. N N202 199239 in years 2010-13.

13.4 cm

Subject category :

5. Nano-structure, Surfaces, and Interfaces

Presentation mode :
oral

Corresponding author :
S. Krompiewski

Address for correspondence :
see above

Email address :
stefan@ifmpan.poznan.pl