

**Supporting Information for: Distinctive Electronic
Transport in Pyridine-based Devices with Narrow Graphene
Nanoribbons Electrodes**

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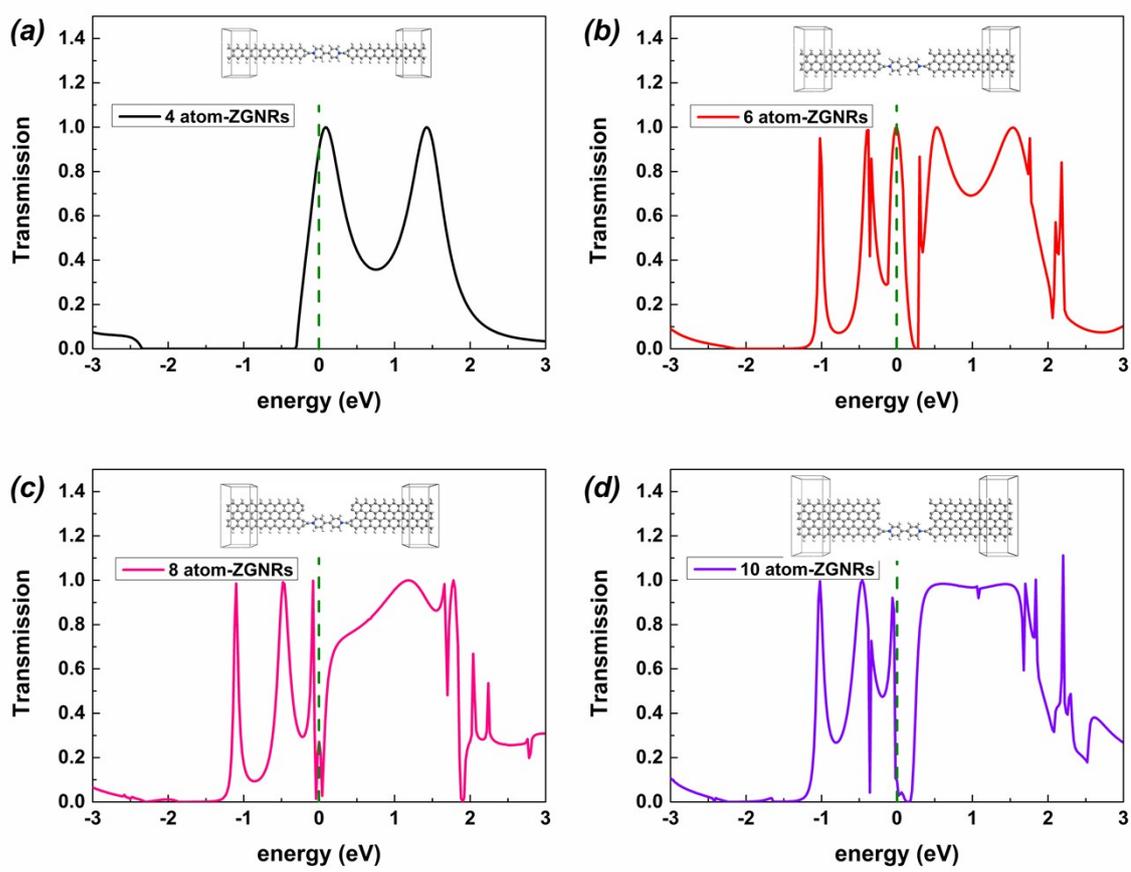


Figure S1 (a)-(d) Transmission spectra of the 4, 4'-bipyridine-based devices with 4-atoms, 6-atoms, 8-atoms and 10-atoms wide ZGNRs electrodes respectively; the insets are structures of these devices.

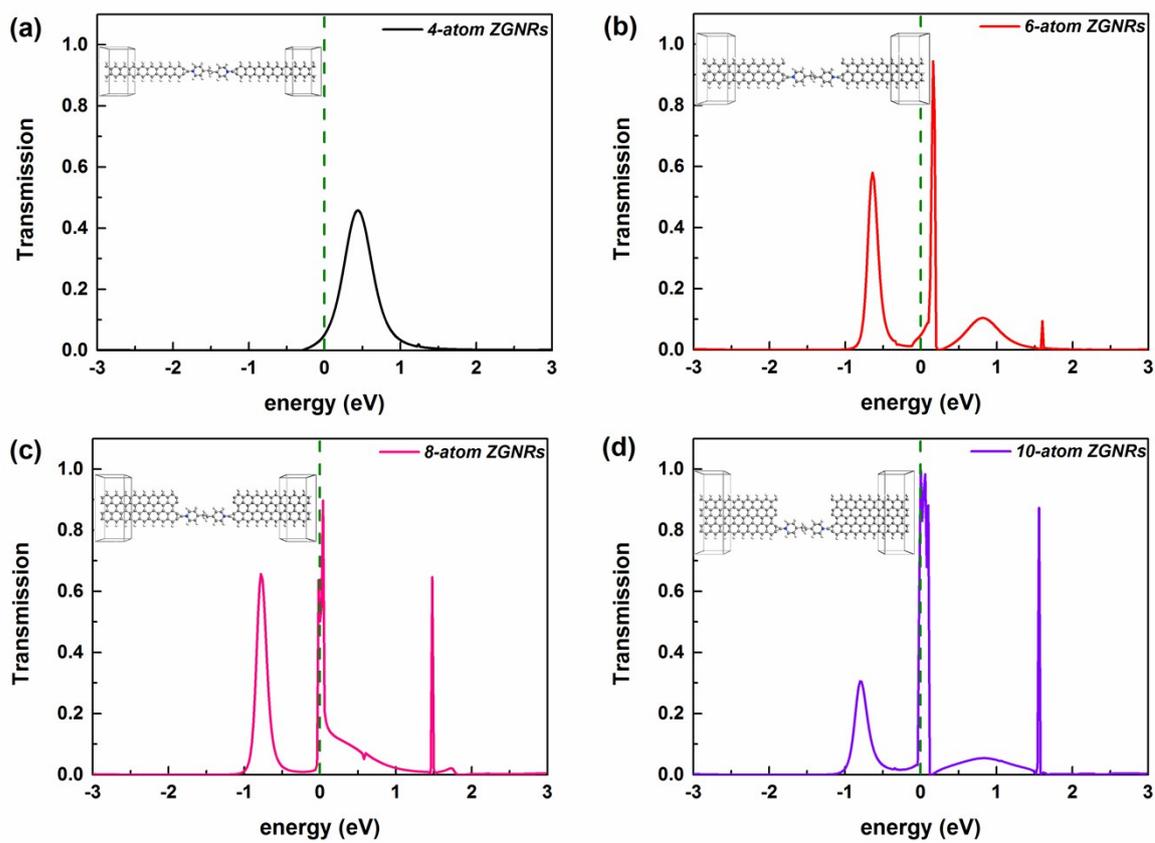


Figure S2 (a)-(d) Transmission spectra of the 4, 4'-ethylenedipyrindine-based devices with 4-atoms, 6-atoms, 8-atoms and 10-atoms wide ZGNRs electrodes respectively; the insets are structures of these devices.

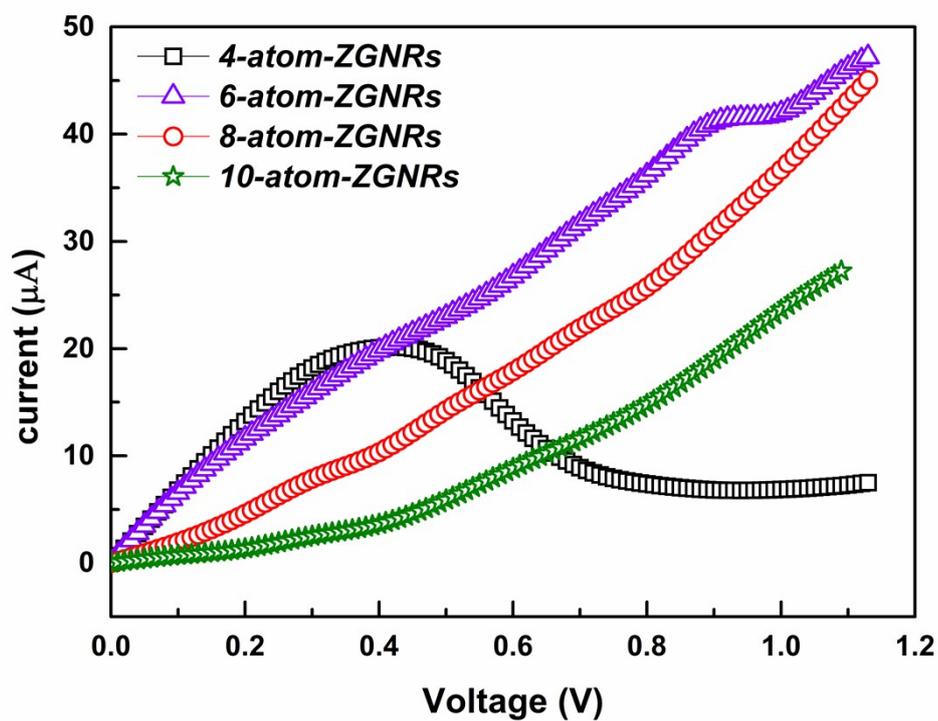


Figure S3 I-V curves of the 4, 4'-bipyridine-based devices with 4-atoms, 6-atoms, 8-atoms and 10-atoms wide ZGNRs electrodes in a bias region [0V, 1.2V].

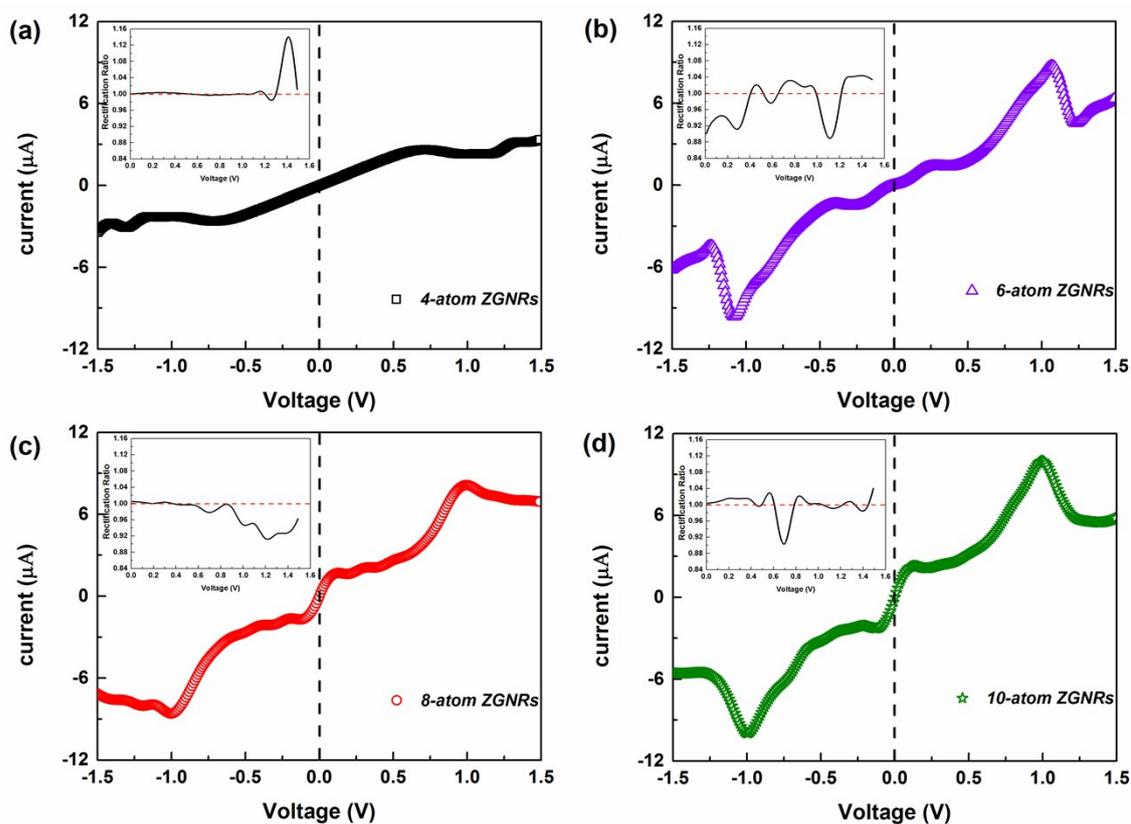


Figure S4 (a-d) I-V curves of the 4, 4'-ethylenedipyridine-based devices with 4-atoms, 6-atoms, 8-atoms and 10-atoms wide ZGNRs electrodes respectively in a bias region [-1.5V, 1.5V] and the corresponding rectification ratio as a function of the bias is presented in the insets.

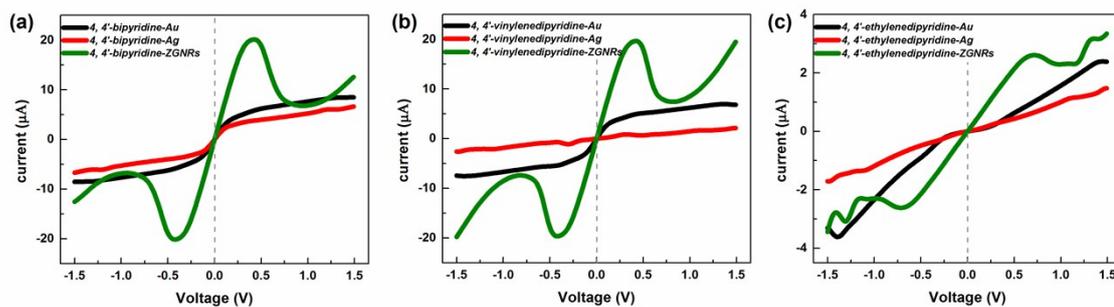


Figure S5 (a-c) I-V curves of metal (Au, Ag)-based devices and ZGNRs-based device with the core molecule of 4, 4'-bipyridine, 4, 4'-vinylenedipyridine and 4, 4'-ethylenedipyridine respectively.

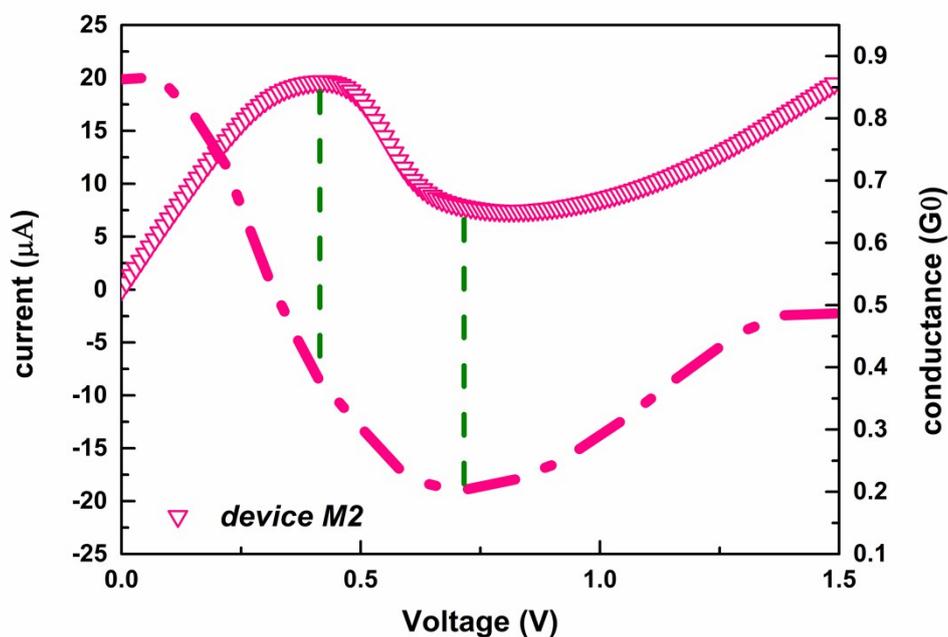


Figure S6 Current and quantum conductance of the device M2 under the bias [0V, 1.5V]. The segment of I-V curve inside the dash line denotes the current-dropping stage.