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Ni-DNA based Y shape nanowire device development and characterization WEN-HUNG WANG, Natl Chiao Tung Univ, YA-HUI LIN, Department of Biological Science and Technology, National Chiao Tung University., CHUNG-HAO YANG, YI CHEN, WEN-BIN JIAN, Department of Electrophysics, National Chiao Tung University., CHIA-CHING CHANG, Department of Biological Science and Technology, National Chiao Tung University. — Owing to the good charge transport and self-assembly property of Ni-DNA, it becomes one of the most promising one-dimensional conducting nanowire. Two-terminal Ni ions doping DNA (Ni-DNA) nanowire devices have been developed and characterized recently. It is of interest to understand the charge transport behavior in a Yshape Ni-DNA device. In this study Yshape Ni-DNA has been synthesized and the DNA is linked on a three-terminal nanodevice via selfassembled process. The $I-V$ curves of Yshape Ni-DNA indicated that this device exhibits negative differential resistance spectra between each two terminals. The further charge transport behavior and mechanism will be revealed in this study.

Keywords: DNA, Y-shape Ni-DNA, negative differential resistance

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