Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Ni-DNA-based nanowires and nanodevices[1] CHIA-CHING CHANG, CHIUN-JYE YUAN, Dept. Biological Science Technology, National Chiao Tung University, WEN-BIN JIAN, YU-CHANG CHEN, Dept. Electrophysics, National Chiao Tung University, MASSIMILIANO DI VENTRA, Dept. Physics, University of California, San Diego — DNA is a highly versatile biopolymer that has been a recent focus in the field of nanomachines and nanoelectronics. DNA exhibits high stability, adjustable conductance, self-organizing capability, programmability and vast information storage. It is an ideal material in the applications of nanodevices, nanoelectronics, and molecular computing. Low conductance of native DNA renders applications difficult. However, doping with nickel ions tunes the DNA into a conducting polymer. Further studies showed that nickel ions containing DNA (Ni-DNA) nanowires exhibit characteristics of memristor and memcapacitor making them a potential mass information storage system. In summary, Ni-DNA has promising applications in a variety of fields, including nanoelectronics, biosensors and memcomputing.

[1]This study was supported in part by the Ministry of Science and Technology (MOST), Taiwan (ROC) MOST 103-2112-M-009-011 -MY3, and MOST 105-2627-M-009-006.

Chia-Ching Chang
National Chiao Tung University

Date submitted: 11 Nov 2016 Electronic form version 1.4