

March 26-28, 2018
Vienna, Austria

Moonhor Ree et al., Polym Sci, Volume 4
DOI: 10.4172/2471-9935-C1-008

NEW DIGITAL MEMORY DEVICES FABRICATED WITH DNA AND DNA-MIMICS

Moonhor Ree, Jinseok Lee, Yongjin Kim and Changsub Kim
POSTECH, South Korea

We report the first digital nonvolatile memory devices fabricated with DNAs and DNA-mimicking brush polymers. DNA-mimicking brush polymers were newly synthesized based on dielectric brush polyacrylates. Salmon testes and calf thymus DNAs were chosen as natural DNAs. Salmon testes and calf thymus DNA devices, as well as DNA-mimicking brush polymer devices revealed p-type unipolar write-once-read-many-times memory behaviors with low switching-on voltage and high ON/OFF current ratio. Such permanent memory characteristics were confirmed to originate from the charge trapping and hopping nature of nucleobase moieties. Overall, this study demonstrated that DNA and DNA-mimicking

polymers are good candidate materials for the production of p-type permanent memory devices with high performance, high stability and low power consumption.

Biography

Moonhor ree is a professor of polymer science in Pohang University of Science and Technology. He received his M.S from the Korea Advanced Institute of Science and Technology and his PhD in Polymer Chemistry from the University of Massachusetts in 1987. His research interests include polymer synthesis and physics, photon science and its applications in polymers.

ree@postech.edu