

Nanoelectroionics to Open New Horizons of Materials Science and Technology

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Nanoelectroionics, i.e. electroionics at the nanoscale, will open new horizons of materials science and technology in two aspects: 1) Nanoelectroionic processes can be used effectively as novel working mechanisms of new (beyond-CMOS) nanoelectronic devices; 2) We can use nanoelectroionic phenomena as useful tools to modify the electronic state of various materials locally. In the present paper, we review our studies related to the two aspects of nanoelectroionics. The studies include:

- a) Synapse-like characteristics exhibited by a single atomic switch¹⁻³⁾,
- b) Interesting properties of a network of a huge number of atomic switches⁴⁻⁶⁾,
- c) Local electron doping into an insulator by using a nanoelectroionic process⁷⁾.

References

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