



# SECOND INTERNATIONAL NANOTECHNOLOGY CONFERENCE ON COMMUNICATIONS AND COOPERATION

## Abstract

### **NanoBridge Technology for Reconfigurable LSI**

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Nanoscale electronic devices such as molecular or atomic devices have been extensively investigated in order to overcome the limitations of silicon-based microelectronics. One of the intriguing phenomena is a conductance switching caused by the creation or annihilation of a nanoscale metallic bridge in a solid electrolyte.

The nanometer-scale switch based on the formation of metallic bridge (namely, NanoBridge) has two remarkable features: a simple structure and a lower ON resistance than that of FETs by two orders of magnitude. One of the promising applications is reconfigurable switches in a programmable LSI.

The programmable LSI has become attractive because the non-recurring engineering cost and turn-around-time can be reduced dramatically. However, it is more expensive and slower in operation than cell-based ICs. This is because their programmable switch uses an SRAM-cell which has a its large area and high on-resistance. Using NanoBridge as the programmable switch reduces chip size by 10 times when compared to conventional technology and improves performance (speed and power consumption).