IMEP-LAHC

SEMINAIRE EXCEPTIONNEL

(de 13 h 30 à 14 h 30, salle Belledonne, IMEP, MINATEC,
ouvert aux chercheurs des autres laboratoires)

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"Composite polysilicon-platinum lateral nanoelectromechanical relays"

by Roozbeh PARSA

Abstract: In advanced CMOS technology nodes, the minimum static power dissipation is limited by finite subthreshold slope and gate leakage. NEM relays are promising devices for low power logic applications due to zero leakage current, infinite subthreshold slope, and scalable actuation voltage. SRAM cells and FPGA blocks, where low switching speed and limited number of cycles are acceptable, are two attractive near-term applications for NEM relays.

This work reports the fabrication and performance of laterally actuated, polysilicon-platinum composite nanoelectromechanical (NEM) relays. Laterally actuated relays are defined in a single lithography step, enabling symmetric electrode and beam structures. The platinum coating serves as the conducting contact material and can also provide a local routing layer. Decoupling mechanical and electrical properties of the NEM relay allows independent optimization of each property. The NEM relays exhibited less than 3kΩ contact resistance and can operate for 10^8 cycles in room ambient.

Roozbeh Parsa *is a PhD candidate in the electrical engineering department at Stanford University working under supervision of Professor Roger T. Howe. His research interests lie mainly in the Nanoelectromechanical relays and their applications. He received his B.S. degree from University of California, Berkeley in 2003 and worked in industry for more than 4 years in electronic devices area before joining Stanford University.*

Institut de Microélectronique, Electromagnétisme et Photonique
MINATEC, INPG, 3 Parvis Louis Neel, BP 257, 38016 GRENOBLE CEDEX 1, France
Tél. +33 (0) 456.529.503 - Fax. +33 (0) 456.529.501
UMR 5130 CNRS, Grenoble INP, UJF
Institut Polytechnique de GRENOBLE