

Simulation of the stiction effect in the metal-to-metal resistive contact occurring in MEMS switches

Objectives

- Study of the mechanical contact between the rough surfaces
- Study of the electro-thermal effects at contact
- Study of the Casimir and Van Der Waals forces on stiction
- Study of the damping effects on stiction

Partners involved and roles

- IMT, Bucharest: surface modelling, simulation of mechanical contact and electro-thermo effects
- HWU, Edinburgh: study of Casimir and Van der Waals forces on stiction
- TNI, Cork: test structures fabrication; study of damping on stiction
- WUT, Warsaw: roughness and material properties determination; study of damping on stiction

Summary of results

- Design and simulation of test structures
- Preparation of the process for the fabrication of test structures
- Surface roughness characterization and 3D surface modeling
- Simulation of the mechanical contact between rough surfaces

Offer to industry

- Algorithms for accurate modeling of surfaces and simulation of contact effects in MEMS
- Simulation services regarding the stiction effect in MEMS
- Surface/material properties measurements

Contact

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Project status

Phase 2 (Simulations, experiments and model validation), August 2005

