

# **MEMS/NEMS for nanometrology applications - selected design and technology problems**

P. Janus<sup>1</sup>, P. Grabiec<sup>1</sup>, K. Domański<sup>1</sup>, T.P. Gotszalk<sup>2</sup>

*1. Instytut Technologii Elektronowej, Warszawa, Poland*

*2. Politechnika Wroclawska, Wroclaw, Poland*

Tremendous progress of microelectronic technology observed within last 40 years is closely related to even more remarkable progress of technological tools. It is important to note however, that these new tools may be used for fabrication of diverse multifunctional structures as well. Such devices, called MEMS (Micro-Electro-Mechanical-System) and NEMS (Nano-Electro-Mechanical-System) integrate microelectronic and micro/nanomechanical structures in one system enabling interdisciplinary applications, with most interesting and prospective being instrumentation for nanometrology.

In this paper we describe selected modelling, design and technology issues related to MEMS/NEMS devices manufacturing for “nanoworld” investigation. Authors present several silicon micro- and nanodevices designed and manufactured at the Institute within last 15 years. It includes various AFM-derived micro- and nanoprobes, resonating devices and nanostructures. Modelling and simulation activities preceding technology development steps are reported as well.

## **Corresponding author**

Paweł Janus, Instytut Technologii Elektronowej, al. Lotników 32/46 02-669 Warszawa, Poland, tel: +48 22 279 32 26, e-mail: janus@ite.waw.pl