MEMS와 생명공학에서의 미세 열유체공학

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Micro-Thermofluidics Engineering in MEMS and Biotechnology

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Abstract

In this talk, an overview of thermofluidics issues arising in MEMS and biotechnology are discussed. The issues are presented in the context of ongoing research at the Samsung Advanced Institute of Technology (SAIT). SAIT has a very active MEMS research program that includes inertial sensor system, RF MEMS, micro cooling system, micro actuators, SPM-based data storage system, bio lab-on-a-chip and optical MEMS. In particular, IC chip cooling and medical diagnostic systems that can be addressed with MEMS technology are discussed. Applications of MEMS microfluidics to address the thermal engineering challenges for the future IC chips are demonstrated providing efficient and compact cooling system for reliable operation of the microelectronic devices. MEMS microfluidics can also be applied in developing lab-on-a-chip devices that will perform most or all of traditional lab functions such as immunoassays, DNA and protein identification on a chip. Novel method of detection and sample preparation/delivery systems using semiconductor technology are discussed. Commercialization issues for the research work that are being conducted at SAIT in MEMS and biotechnology area in anticipation of future market and technology demands are also introduced.