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Editorial

Micromachines – An Open Access Journal on Microelectromechanical Systems (MEMS)

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When I joined a course on microsensors given by Steve Senturia, Martin Schmidt, and Roger Howe at MIT in 1988, I saw the first video of the earliest rotating silicon micromotor. It was the beginning of a high-time of microelectromechanical systems (MEMS): everything we did was new [1], and the MEMS community was sure that we not only reached a new frontier (which might be true), but that overcoming this boundary would lead to solutions for the most pressing problems of human kind [2] (which might not be true). With the demonstration of a rotating micromachine as a key element in MEMS, we had the impression that basically all problems in our young field could be solved. In the past 20 years, we saw the explosive development of the field. We now have a good idea of the value of MEMS, which is in many respects different to what we anticipated 20 years ago, and which includes many new developments.

An important branch of MEMS is actuators: devices capable of converting electrical energy into mechanical energy. Actuators are devices that can create motion. There is a vast number of applications for such micromachines, ranging from instruments for the positioning of tips [3] to systems for low invasive surgery [4], from pumps [5] and flow controllers in lab-on-a-chip devices [6], to applications in robotics to form active skin to suppress the onset of turbulence of the flow along airplane wings, to tiny distributed actuators for robotic hands in nanospace crafts [7].

Many of these systems are only visible behind the horizon, requiring fundamental research in transduction mechanisms, materials, fabrication methods, *etc.* On the other hand, many concepts of micromachines are by now used in commercial miniaturized systems, with a rapidly increasing trend.

A glace to the planned special issues shows that the scope of *Micromachines* is even wider. The very first paper [8] of the journal deals with a concept for a three dimensional memory, the realization of which is far beyond the horizon; it is part of the special issue of self-assembly, which is a fabrication technology potentially suitable for the manufacture of complex Microsystems. [9].

This new Open Access Journal *Micromachines* (ISSN 2072-666X) is devoted to areas of MEMS described above. It should cover the whole range of research, from applied research on design, construction, and application, all the way to fundamental research related to micromachines.

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