

Microactuators for Fluidic Applications

The idea to initiate a Special Issue on *Microactuators for Fluidic Applications* came from the fact that it is regarded as one of the most dynamic and promising fields for MEMS (micro electromechanical systems) devices in the near future, displayed by increasing interest not only from academia, but also from industry. Even beyond the ink-jet printer head that is currently the most prominent representative in the field of microactuators in combination with microfluidics, new application scenarios are emerging especially in the biomedical area (e.g., micromachined actuators and pumps for laboratory-on-chip devices), where further steps toward commercialization are a main aspect in the short and medium term R&D focus.

In order to provide a compact overview on the actual status of microactuators for fluidic applications, contributions are carefully selected from several key application areas. However, a strong focus is on the improvement of micromachined pumping elements applying different operation principles. From these papers, it can be concluded that the materials that were predominantly used in MEMS technology, such as silicon and glass, are effectively being replaced by organic, metallic, or even ceramic-based materials. The same is true for the joining techniques, where now welding or gluing processes are being used instead of conventional (anodic) bonding approaches. Therefore, new perspectives in device fabrication open up, providing a solid basis for both a successful market entry of selected devices as well as the generation of novel, nonconventional ideas for future device designs.

I would like to express my deep thanks to all the authors for their immediate willingness to support this Special Issue with their latest results. It was a pleasure to work with them. Finally, I hope you will enjoy reading this Special Issue and take inspiration from it for your future research activities.

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Guest Editor
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U. Schmid was born in Munich, Germany, in 1972. He started studies in physics and mathematics at the University of Kassel in 1992. In 1995, he spent 6 months at the Transport Group in the Physics Department, University of Nottingham, UK, to gain experience in wide band gap semiconductor physics. He performed his diploma work at the research laboratories of the Daimler-Benz AG (now DaimlerChrysler AG) on the electrical characterization of silicon carbide (6H-SiC) junction field effect transistors for harsh environment applications. He finished his studies in 1998 at the University of Frankfurt/Main, Germany. In 1999, he joined the research laboratories of DaimlerChrysler AG (now EADS Deutschland GmbH) in Ottobrunn/Munich, Germany. He developed a robust flow sensor for high-pressure automotive applications and received his Ph.D. degree in 2003 from the Technical University of Munich, Germany. From 2003 to 2008, he was post-doc at the Chair of Micromechanics, Microfluidics/Microactuators of Prof. Dr. H. Seidel at Saarland University. Since October, 2008, he has served as full professor at the Vienna University of Technology heading the Department for Microsystems Technology. U. Schmid holds 14 patents and has authored or co-authored more than 100 publications in refereed journals and conferences.