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The New BioMEMS

MEMS products have successfully made the complete transition into the consumer space. Today, literally billions of MEMS devices are manufactured every year for a wide variety of consumer applications including cell phones, games, video and still cameras, . These products include microphones, accelerometers, gyroscopes, FBAR filters, and oscillators. Such huge quantities demand that large foundries and fabs are involved in manufacturing these ubiquitous components. Also, the next generations of these devices, targeting, for example, inertial grade 10 axis navigation systems to supplement GPS, are in the works and will be in very common use 5 years from today. So, in a sense, MEMS developers have begun to turn their attention more and more to BioMEMS. Today, there are precious few successful BioMEMS devices on the market. In the area of implantable devices, CardioMEMS has an implantable pressure sensor for monitoring aneurysms. Cochlear implants are routine, allowing deaf people to hear. In the area of microfluidics, companies such as Caliper and Cepheid manufacture chips and plastic for biochemical analysis and diagnostics. But, there are many much bigger and much more impactful devices on the horizon, such as retinal implants, health monitoring systems, and continuous chemical sensing.

We will discuss these and other important new developments in the BioMEMS arena. We will also discuss how the recent huge changes in the VC industry are dramatically affecting the funding, the progress, and the implementation of these new developments.

Bio:

Kurt Petersen received his BS degree *cum laude* in EE from UC Berkeley in 1970. In 1975, he received a PhD in EE from the Massachusetts Institute of Technology. Dr. Petersen established a micromachining research group at IBM from 1975 to 1982, during which he wrote the review paper “Silicon as a Mechanical Material,” published in the IEEE Proceedings (May 1982). This paper is still the most frequently referenced work in the field of micromachining and micro-electro-mechanical systems (MEMS).

Since 1982, Dr. Petersen has co-founded six successful companies in MEMS technology, Transensory Devices Inc. in 1982, NovaSensor in 1985 (now owned by GE), Cepheid in 1996 (now a public company on NASDAQ: CPHD), SiTime in 2004 (still private), Profusa in 2008 (still private), and Verreon in 2009 (acquired by Qualcomm). All of these companies have become technical and commercial leaders in the field of MEMS devices and applications.

Dr. Petersen has published over 100 papers, and has been granted over 35 patents in the field of MEMS. In 2001 he was awarded the IEEE Simon Ramo Medal for his contributions to MEMS. Dr. Petersen is a member of the National Academy of Engineering and is a Fellow of the IEEE in recognition of his contributions to “the commercialization of MEMS technology”.