

Integration of Nano/Micro Technology into Products

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There is little debate among technologists working in microsystems and nanotechnology that the two fields are technologically unique. However, there is a strong opinion emerging that micro and nanotechnology are both facets of an industry and science that address matter, devices, and products on a scale where the phenomena that govern their performance are different from traditional science and engineering. This abstract will describe aspects of commercialization that are common to both arenas.

It is also important to recognize that the marketplace is less concerned about micro and nanotechnology and more concerned about products, applications, and standards and similar strategies may be used to successfully deploy these technologies.

First and foremost, the challenge of product deployment involves finding the customer or the end-user. As with any emergent technology, this represents a challenge equal to, or in some cases greater than, the technological challenges. Firms will tend to use technologies that are well known to them, have recognized standards, and can be transferred to products using familiar methods. For the successful implementation of micro and/or nanotechnology, it is incumbent on the small tech industry to educate the marketplace about how these technologies can be leveraged.

The successful implementation of MEMS involved finding applications where other technologies simply did not work. Other than a select few high volume applications (e.g. automotive), successful MEMS companies found the niche applications where functionality was enabled by MEMS rather than displacing incumbent technologies.

Both micro and nano technology also share common ground in the way that standardization is occurring: the processes used to make the end products. A recent report by MANCEF (Micro and Nanotechnology Commercialization Education Foundation) states that a small number of processes can enable most of the available devices and the additional processes to enable the other remaining few percent are very small in number.