

ACOUSTICS2008/954
Silicon microphones: a commercial success? and what comes next?

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The first silicon microphone commercial product was introduced to the market in late 2005. As of early 2008 the cumulative production is well over a half billion units and the production rates continue to rise. To date the acoustical performance of these microphones is only as good as that of the lowest priced miniature electret microphones. Yet acoustical systems manufacturers often prefer silicon microphones because they are compatible with automated insertion and wave soldering assembly methods. Silicon microphones are also more environmentally stable in sensitivity than are electrets which may be important in matched microphone applications. Current research activities are investigating methods to reduce the internal noise improve matching tolerances, and further reduce manufacturing costs. This paper will review the current state of silicon microphones in commercial manufacture, and will survey some of the areas of current research in an attempt to suggest some possible directions of future market development.