Screen-printed piezoceramic thick films for miniaturised devices

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ABSTRACT

The development towards smaller devices with more functions integrated calls for new and improved manufacturing processes. The screen-printing process is quite well suited for miniaturised and integrated devices, since thick films can be produced in this manner without the need for further machining. On the other hand, the process of screen printing thick films involves potential problems of thermal matching and chemical compatibility at the processing temperatures between the functional film, the substrate and the electrodes.

As an example of such a miniaturised device, a MEMS accelerometer based on PZT thick film will be presented. The design and process flow of this accelerometer has been optimised by means of finite element modelling (FemLab). Consequently it has proved possible to eliminate post-processing steps after the screen printing of the PZT thick film.

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