Shape and Functional Elements of the Bulk Silicon Microtechnique

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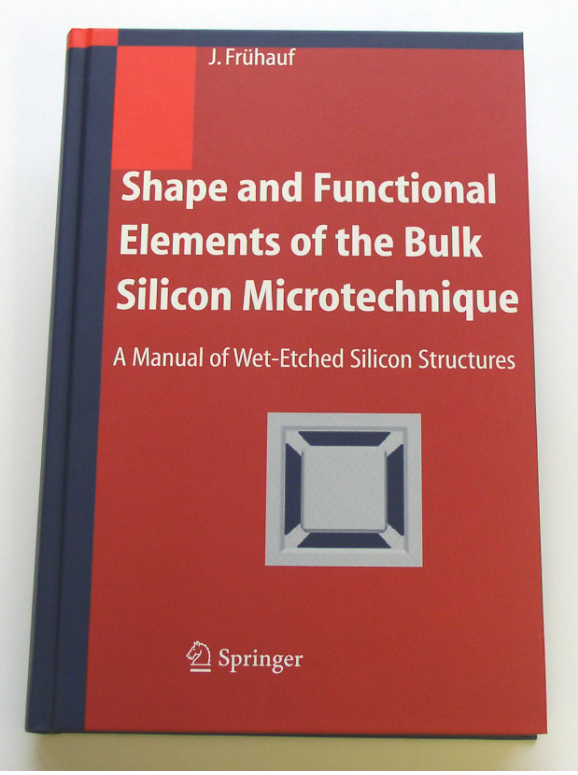
As a result of activities and experiences for many years in the field of wet chemical etching of silicon a systematic compilation of etched microelements is given. The possibility for writing the manual with the title "Shape and Functional Elements of the Bulk Silicon Microtechnique" was enabled by the Stiftung Industrieforschung, Germany. This includes an extensive literature research in different papers and the design and fabrication of new microstructures.
The methodic manual presents a survey of the shape related and functional elements of the bulk silicon microtechnique. It gives a systematic description of simple shape elements and of elements for mechanical, optical and fluidical applications. It includes practical instructions for the use of the relevant techniques and an extensive collection of examples for the support of the search for applications via photographs, drawings and references. It serves as a valuable guide to the design of etch masks and processes while summarizing the important properties of silicon.

After an introduction the 2nd chapter summarizes the technological basis of the bulk silicon microtechnique. Chapter 3 deals with the basics of orientation dependent etching of silicon. In chapter 5 the simple shape elements are described including one- and two step etch processes. The content of chapter 6 are the elements for a mechanical application among them spring elements, levers and bearings. Chapter 7 contains the elements for fluidic application including channels, elbows, branchings, caverns and nozzles. The optical elements mentioned in chapter 8 are fibre grooves, micro mirrors, beam splitters and gratings. The book is finished with a summary of the properties of silicon compared with other materials.
The manual is aimed at producers of sensors and microtechnical components as well as producers of components of precision engineering and optical applications.



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