Bulk micro-machining is a technique widely used for the fabrication of a large number of components as sensors and actuators for use in academic institutions as well as in industry. The interest began with the need to prepare clean surfaces for silicon device fabrication. This interest is increasing with the development of microsystems technologies. Historically, bulk micro-machining is the first method to realize deep etching in silicon, to define 3D shapes before the RIE processes. Wet etching is still a key process in fabrication and research is mainly oriented towards modeling, simulation of 3D shapes, and the control of surfaces roughness.

Beginning four years ago, a bi-annual workshop (Physical Chemistry of Wet Etching of Silicon) has been organized in order to focus interest on this topic. The concept of this workshop is to be an open scientific meeting gathering together scientists with various backgrounds such as chemistry, physics, and electrochemistry, and users. The first one in Holten (Netherlands), under the direction of Prof. M. Elwenspoek, made this exciting idea a reality, and it was followed by a second in Toulouse (France) in 2000. The next workshop is planned in spring 2002 in Nara (Japan).

This special issue is a mirror of papers presented in Toulouse with a selection of ten papers, compiled together, and includes two invited papers. In the first invited paper, entitled “Understanding the evolution of silicon surface morphology during aqueous etching”, Melissa A. Hines presents a complete work (STM observations and kinetic Monte Carlo simulations) on etching with NH₄F and discusses the influence of IPA. In the second invited paper, entitled “Anisotropic etching of silicon in TMAH solutions”, Osamu Tabata summarizes experimental data obtained for different orientations, masking materials and aluminum versus concentration and temperature. Other papers present work related to the preparation of surfaces for etching as well as experimental data and simulations of 3D etching shapes. The coverage of topics is broad, so as to make inventory of the phenomena involved in anisotropic wet etching and enhance comprehension.

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