Electrical characterization of single nanometer-wide Si fins in dense arrays

This paper demonstrates the development of a methodology using the micro four-point probe (mu 4PP) technique to electrically characterize single nanometer-wide fins arranged in dense arrays. We show that through the concept of carefully controlling the electrical contact formation process, the electrical measurement can be confined to one individual fin although the used measurement electrodes physically contact more than one fin. We demonstrate that we can precisely measure the resistance of individual ca. 20 nm wide fins and that we can correlate the measured variations in fin resistance with variations in their nanometric width. Due to the demonstrated high precision of the technique, this opens the prospect for the use of mu 4PP in electrical critical dimension metrology.

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