

Quality control of JEOL JBX-9500FSZ e-beam lithography system in a multi-user laboratory - DTU Orbit (08/11/2017)

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Consistent results on an electron beam lithography instrument pose a major challenge in multi-user open-access nanofabrication laboratories. Calibration can be done using special and dedicated instruments, however, this is time consuming and expensive. We address this challenge by a carefully designed quality control procedure characterized using a scanning electron microscope. We inspect position accuracy, dynamic focus, and dynamic astigmatism, as well as single and multi-pixel lines in thin resist. Beam shape quality is inspected in the corners of the writing field at 6 different beam currents between 2 and 60 nA. We use positive-tone resist AR-P6200 (CSAR 62) from All Resist. With our quality control procedure, we routinely write 11 nm lines on a 40 nm pitch, and obtain a field stitching accuracy better than 3 nm and overlay accuracy less than 7 nm.

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