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Georgia Tech's Microelectronics Research Center (MiRC) currently operates a JEOL JBX-9300FS 100kV electron beam lithography system. The JBX-9300FS features a spot beam, vector scan, a step and repeat stage, and is capable of varying the beam size widely. Its dynamic correction system eliminates defocusing resulting from beam deflection. The system is versatile in exploring new frontiers in



nanotechnology, including basic research of electronic devices, optical elements, and advanced optical and nano-imprint lithography masks, to name a few.

Other salient points about the JBX-9300FS include a 4nm electron beam diameter, 50kV/100kV accelerating voltage, and ZrO/W thermal field emission source. The system has less than 20nm field stitching accuracy and less than 25nm overlay accuracy at 100kV. Our tool has demonstrated 19nm line widths patterned in 40nm thick ZEP520 resist. From small pieces up to 300mm (12") wafers can be handled with a maximum 9" of writing area. In addition 5" and 6" square mask pieces can be loaded.

Georgia Tech's JBX-9300FS electron beam lithography system has been up and running since June 2004 and served its first customer in July 2004. Active research projects utilizing the tool include such topics as advanced high resolution chemically amplified resists, quantum dot fabrication, t-gate patterning for high speed HEMT devices, high resolution nano-imprint embossing stamps, and high speed photo detectors. The JBX-9300FS is operated by Devin Brown and Raghunath Murali, both research engineers on staff at the Microelectronics Research Center. For more information on electron beam lithography at Georgia Tech please contact either Devin or Raghunath.