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Center for X-ray Lithography: recent activities

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The Center operates five beamlines, of which three are equipped with SAL steppers. The most recent addition, the SAL Mod 4, is a prototype 0.25 μm aligner, extensible to sub 0.18 μm and the first of its kind to be installed in the U.S. The activities of the Center include the whole XRL domain, from mask making to photoresist processing and inspection. The Center also supports various industrial programs, in particular AMD and Lockheed-Martin. We will review and discuss the activity of the Center in the area of new beamlines development, X-ray photoresist processes, and modeling, with particular emphasis on the limits of X-ray lithography. We have developed computational models for the limits of XRL, as well as innovative tech-niques to achieve very high resolution. On the basis of these results, we can expect that XRL may be used to pattern devices well into the sub-50 nm range. Other areas of activity are diffractive optics, X-ray spectromicro-scopy and high-aspect ratio lithography. We will review and discuss the status of XRL in the U.S. and present the contributions of CXrL to the development of this important technology.