

## **SPACER IMAGE TRANSFER PROCESS FOR FABRICATION OF DEEP SUB-MICRON STRUCTURES.**

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In typical semiconductor fabrication process critical dimensions are limited by the capabilities of the lithography process, but the abilities of optical lithography will reach its limits as devices are pushed past the 50 nanometer regime. In order to continue the aggressive scaling of devices past 50 nanometers other methods of fabricating structures with sub-50nm critical dimensions is needed. Spacer image transfer shows promise as an alternate method in creating sub-50nm structures without some of the process limitations present in classical optical lithography. Structures fabricated using a spacer image transfer process will be limited by the thickness of the spacer film deposited and shows to have a tighter critical dimension distribution over equivalent optical lithography processes. Initial work on this process was done using low temperature oxide (LTO) spacers to create 50nm fins, but also showed the need for a more uniform film deposition and etching process as well as the importance of anisotropic etching. Work has continued in optimizing the LTO Spacer Process and initial work has started in investigating the viability of nitride spacers as an alternate process. The presentation will discuss the optimization of the LTO Spacer Process and planned future work into the Nitride Spacer Process.