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Optimization of STiGer process for silicon deep etching THOMAS TILLOCHER, VINCENT GIRAULT, GREMI, JULIEN LADROUE, GREMI - STMicroelectronics, PHILIPPE LEFAUCHEUX, GREMI, MOHAMED BOUFNICHEL, STMicroelectronics, PIERRE RANSON, REMI DUSSART, GREMI — The STiGer process consists of cycling passivation steps (SiF<sub>4</sub>/ $O_2$  plasmas) and etching steps to get vertical structures. The etching steps can be either isotropic (SF<sub>6</sub> plasmas) or anisotropic (SF<sub>6</sub>/ $O_2$  plasmas). Like the cryogenic process, it is required to cool the silicon substrate to temperatures as low as -100 °C. This process combines advantages of both Bosch process and standard cryogenic process. Due to the cyclic passivation steps, the  $SiO_xF_y$  film is stronger than in standard cryoetching. In addition, the STiGer process is clean (no pollution of the etched structures and the chamber) and the robustness is enhanced in comparison with standard cryoetching: the profiles are less sensitive to temperature variations. We will present our most recent performances with the STiGer process and we will discuss the possible origin of the defects observed on the profiles. Our objectives are to etch sub-micron trenches that will be further used for the realization of integrated capacitors.

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