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**SQUIDs Fabrication with the Weak Links**[1] ABDELAZIZ RAMZI, SERGE A. CHARLEBOIS, Interdisciplinary Institute for Technological Innovation (3IT) and Department of electrical and computer engineering, Université de Sherbrooke — We present a new technique to fabricate SQUIDs nanobridges as the weak links. We have shown that these chemical-mechanical polishing based process has minimal impact on Al and Nb superconducting properties as demonstrated on long microstructures. This process allows realizing "2D nanobridges" formed of the same material as the electrodes and with same thickness. The Nb nanobridges are approximately 100 nm wide and long and 20 nm thick. Similar structures have been fabricated in Ti and Al. We are working at increasing the quality of the deposited films especially in the initial phase for this is the material that remains after CMP and forms these very thin nanobridges. In these very thin structures, it is critical to have high quality material being deposited from the very start of the deposition process as it is those initial layers that are left as a device after CMP [1]. Also allows producing "3D structures" with nanobridges thinner (e.g. 20 nm) than the leads (e.g. 100 nm) in a single lithography step. In this case, we also show that the nanobridge can be made of a material other than the leads thus allow SS'S or SNS type of weak links.

[1] A. Ramzi et al., *Physics Procedia,* Volume **36**, (2012), 211–216.

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