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Preliminary results from the latest production of 3D pixel detectors at SINTEF MiNaLab

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SINTEF MiNaLab recently completed its fifth fabrication run of full 3D pixel detectors with active-edges. The sensors were designed by the University of Oslo in collaboration with SINTEF within the Norwegian 3D detector collaboration. Sensors were fabricated on 6", Si-Si bonded wafers, with a device layer thickness of 150µm, using a single-sided processing approach. The production run included two different wafer layouts featuring multiple pixel geometries, 50x50 (1E), 25x100 (1E) and 25x100 (2E). Sensor compatible with both RD53A and RD53B readouts were included, as well as FE-I4 compatible sensors as reference with past productions. The temporary metal layer was deposited in December 2019 and measurements started in January 2020. In this presentation we will focus on the promising preliminary measurement results from standard planar test structures, 3D diodes and 3D pixel detectors of all flavors. The fabrication process and its challenges will be discussed, together with the plans for functional testing, irradiation, and for the next production run of RD53B compatible 3D sensors at SINTEF MiNaLab in the near future.

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