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Aging properties of Silicon Carbide and various other solid state UV photodetectors under 254 nm Hg lamp irradiation

Silicon Carbide shows no measurable degradation after 2500 hours of irradiation by mercury lamp energy at 254 nm at a flux of 100 watts per square meter (10 mW/cm²).

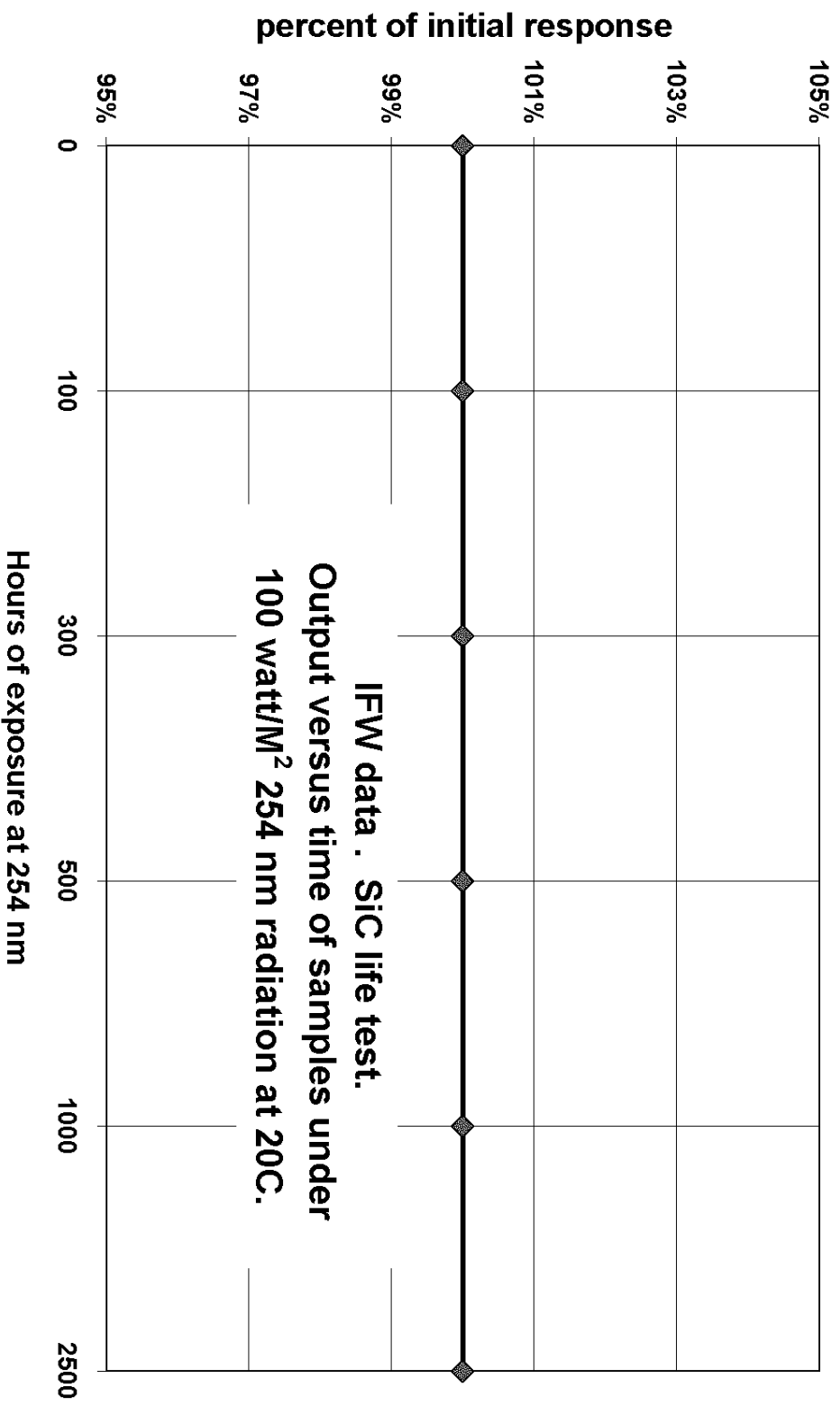
In contrast, ordinary silicon photodiodes have lost more than 40% of their original output after 208 hours at 200W/M². Other candidate photodiode materials currently available include GaAsP, GaP, and GaN. GaAsP has degraded by 4% on average after 1000 hours at 15 W/M² (1.5 mW/cm²) and GaP shows a similar degradation. No data is available for GaN at this time.

Other than SiC, only oxynitrile passivated silicon, available from IRD, appears to avoid significant degradation with high dose.

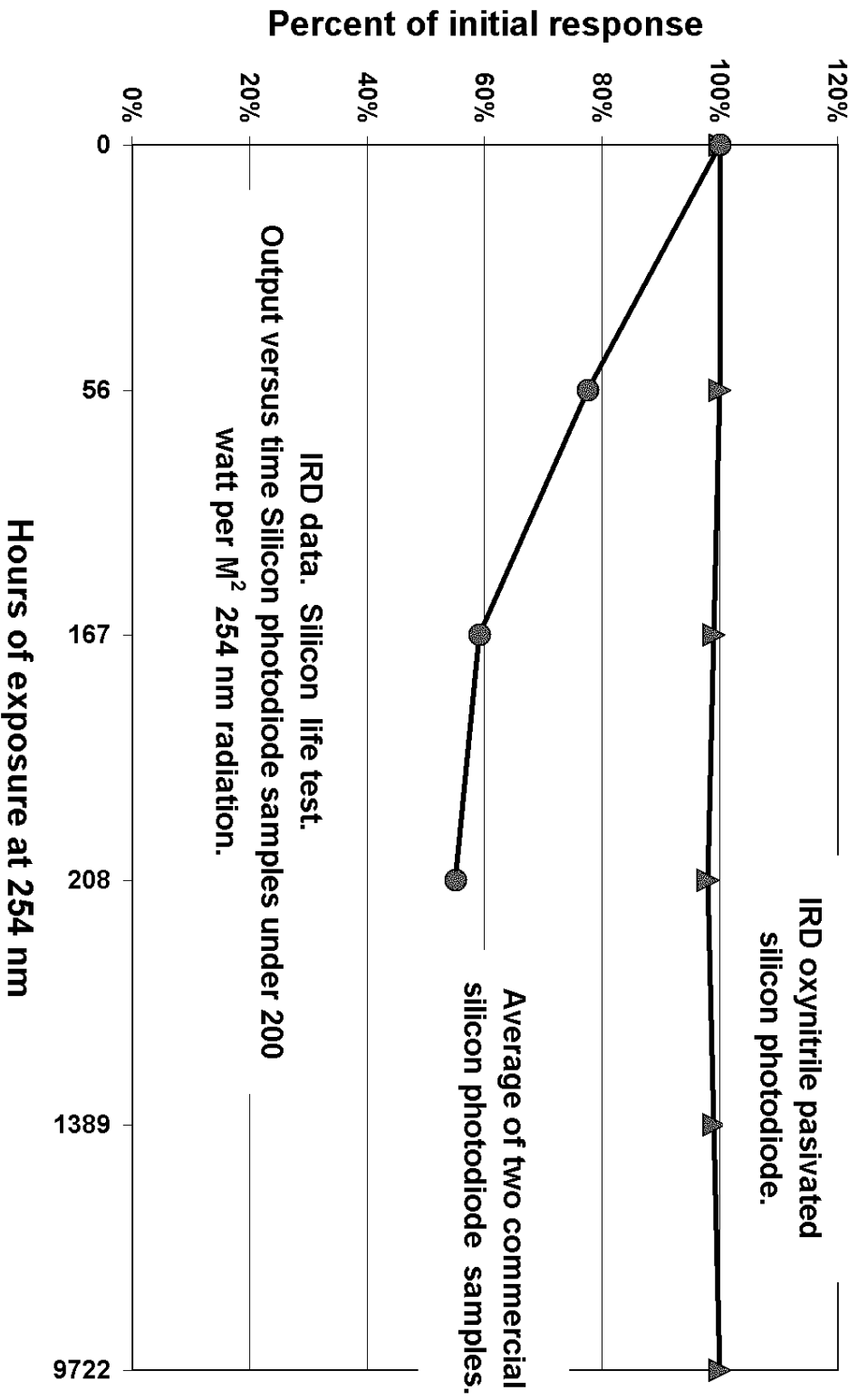
Please refer to the charts on the following pages.

- Fred Perry, 20 Feb 2001

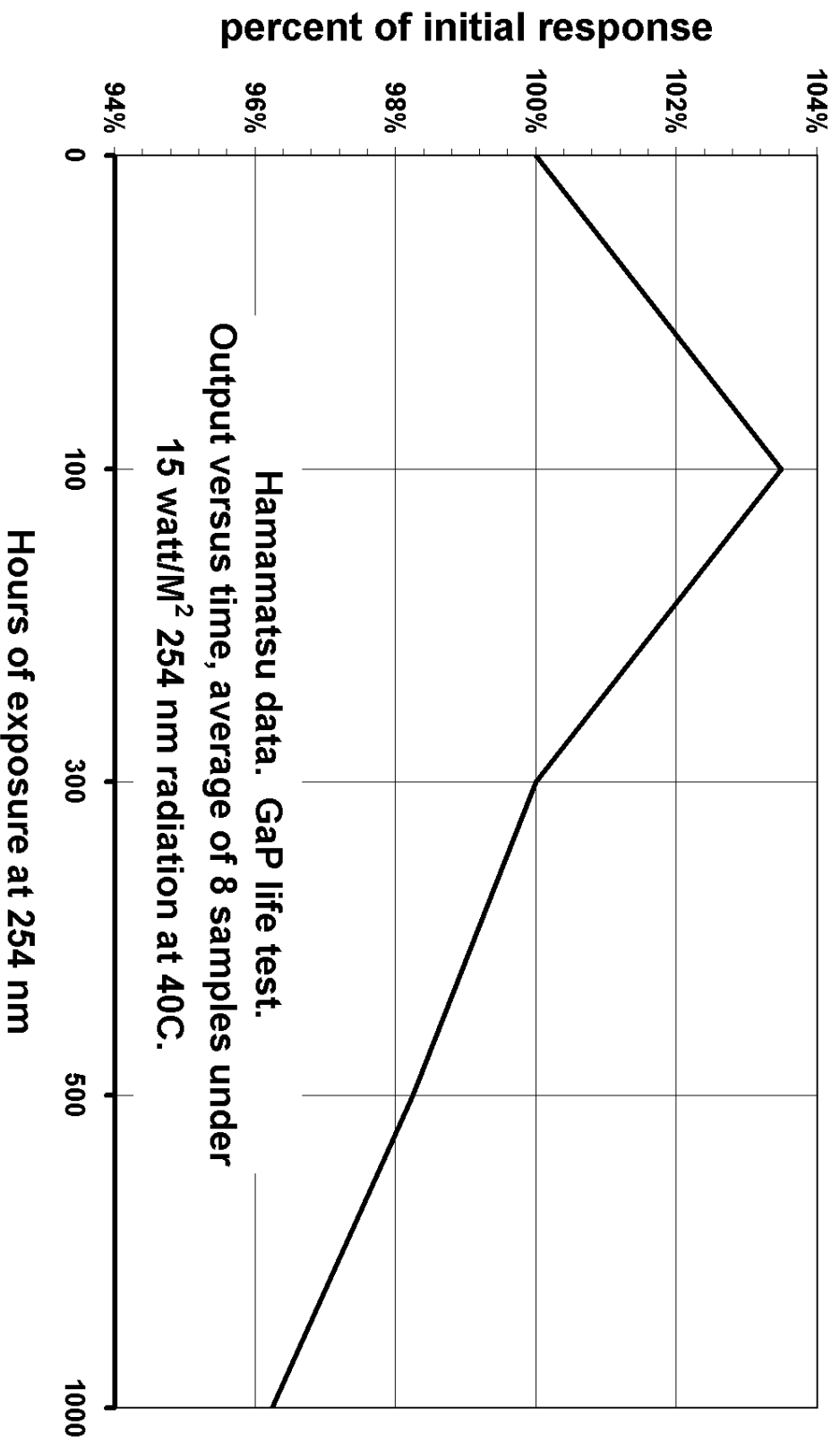
Sic variance in outout versus 254 nm dose



Silicon Output versus 254 nm dose



GAP variance in output versus 254 nm UV Dose



GaASP variance in output versus 254 nm UV dose

