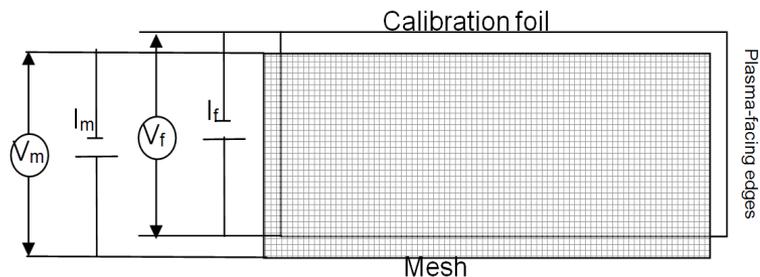


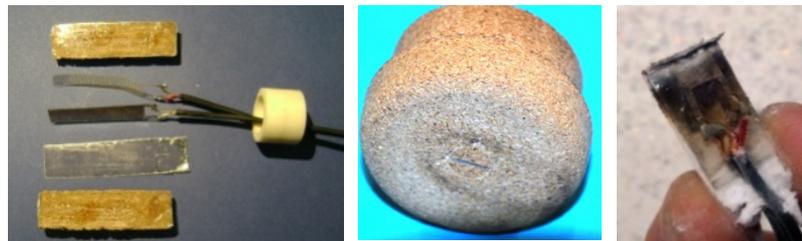
“ReGS” – A Resistive Grid TPS Recession Sensor by George Vekinis

Problem: Sizing and modelling of ablative TPS heat shields is still a bit of “dark art” since they involve many assumptions regarding the recession of the ablator.

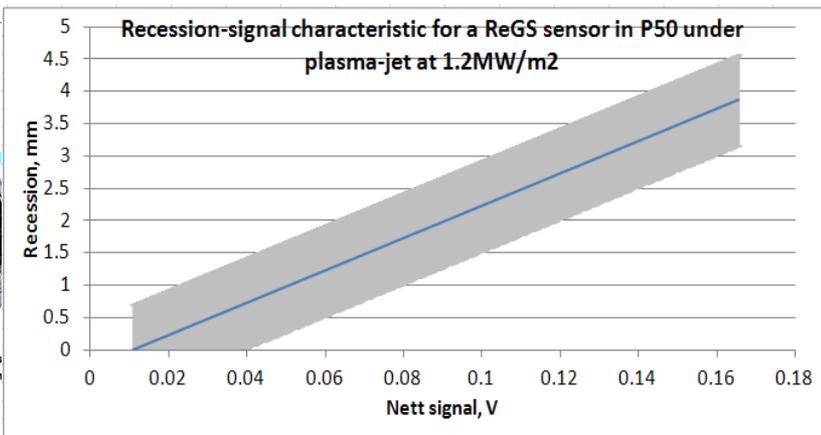
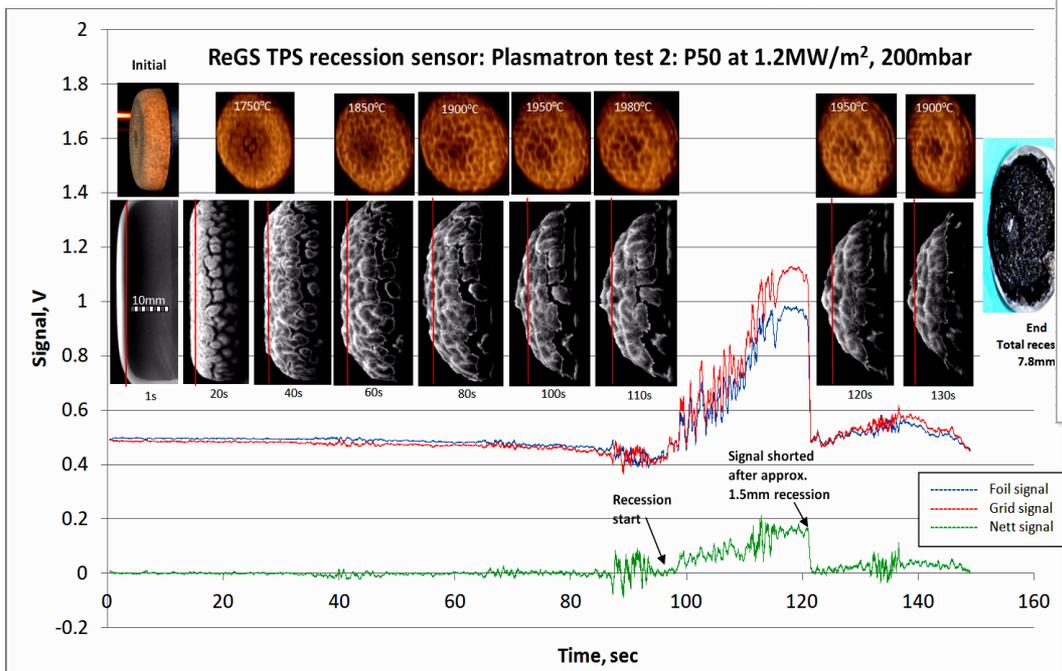
State of the Art: ARAD and HEAT sensors assume that the char resistance is knowable – is it? The **ReGS sensor** does not rely on the char – there is a continuous circuit at all times and the final signal is temperature-compensated.



The REGS temperature-compensated sensor. The plasma-facing edge is on the right and the recession signal is given by $\Delta V = V_m - V_f$



A prototype of a REGS sensor before and after ablation testing.



Way forward:

- More plasma testing (AQ61, ASTERM ..)
- Print sensor directly on a ceramic
- Better electronics
- Space flight test!