

**IN-SITU MEASUREMENTS OF THE ELASTIC MODULUS OF ZIRCONIA POLYCRYSTALS HELD IN A STATE OF FLASH INDUCED BY AN ELECTRIC FIELD**

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Partially Stabilized zirconia is known to show the phenomenon of flash under applied electric fields. A proposed mechanism for flash is the introduction of nonlinear lattice vibrations at the onset of flash which may further soften the shear modulus of the lattice. This softening would in turn lower the energy barrier for the formation of defects. Here, in-situ measurements of elastic modulus of 3Y-TZP during flash for different current densities is estimated by comparing the modal response from the experiments against the simulations. Results in Figure 1 compare the modulus with and without (baseline) flash showing a lower modulus during flash for that corresponding sample temperature. Hence, supporting a scientific explanation behind flash.

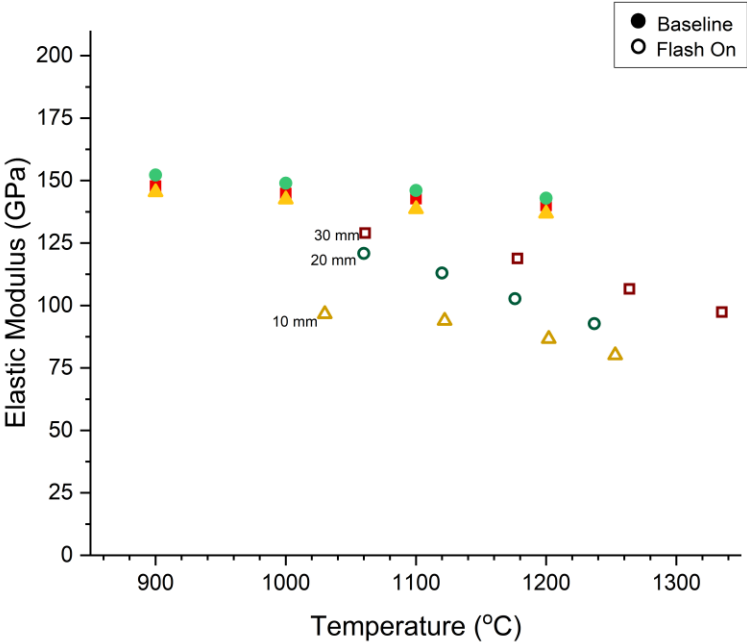


Figure 1 – Elastic Modulus of 3Y-TZP. Here, the solid points represent the baseline values in no flash state and hollow points are the values during flash for different flash lengths.