

## THE ONSET OF FLASH SINTERING 8YSZ

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The abrupt conductivity surge of 8YSZ was achieved with applied electric field and temperature after a short incubation time during flash sintering, and accompanying fast mass transport when using green bodies. Joule heating was proposed to explain the onset of flash sintering due to the enhanced conductivity of ceramics at high temperature, however, we observed that the black front is moved from cathode to the anode side during the incubation stage in 8YSZ, and the onset is triggered when the black front almost reach the anode, but still keep a narrow gap from the electrode. It believed the association of charged oxygen vacancies with electrons induced the flash event, then the reaction of electrons and charged oxygen vacancies to form uncharged oxygen vacancy near the anode side sustained the steady state.

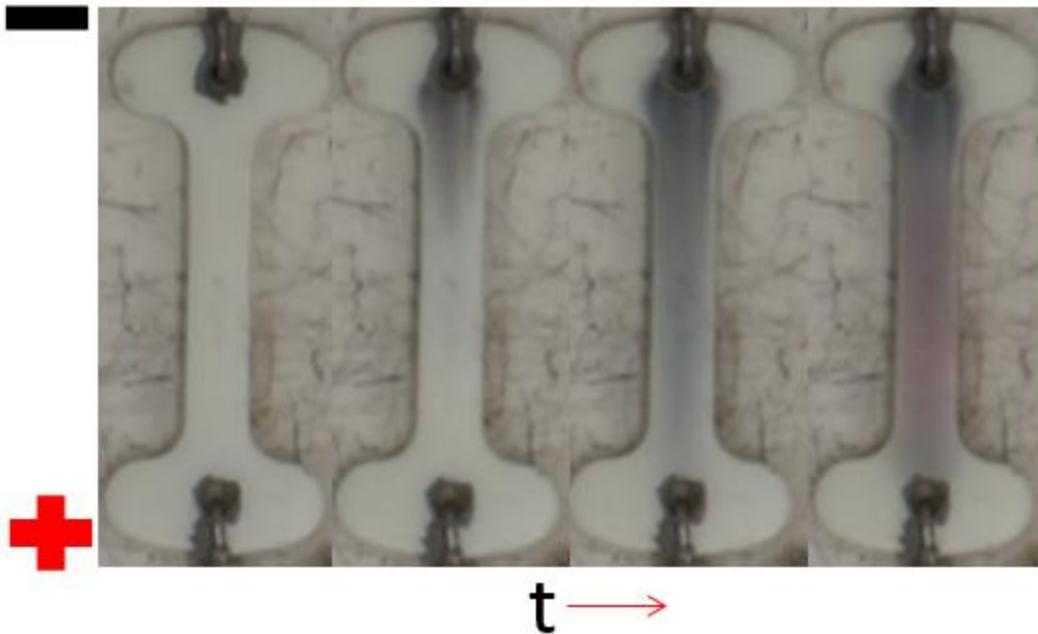


Figure 1 – The onset of flash sintering 8YSZ at 400V, 425 °C.