In situ characterization of delamination and crack growth of a CGO–LSM multi-layer ceramic sample investigated by X-ray tomographic microscopy - DTU Orbit (12/12/2018)

In situ characterization of delamination and crack growth of a CGO–LSM multi-layer ceramic sample investigated by X-ray tomographic microscopy

The densification, delamination and crack growth behavior in a Ce0.9Gd0.1O1.95 (CGO) and (La0.8Sr0.15)0.9MnO3 (LSM) multi-layer ceramic sample was studied using in situ X-ray tomographic microscopy (microtomography) to investigate the critical dynamics of crack propagation and delamination in a multilayered sample. Naturally occurring defects, caused by the sample preparation process, are shown not to be critical in sample degradation. Instead defects are nucleated during the debinding step. Crack growth is significantly faster along the material layers than perpendicular to them, and crack growth and delamination only accelerates when sintering occurs.

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