

In-situ EDXRD Study of Flash Sintering of Zinc Oxide

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Flash sintering is a new technique that uses an electric field to pass current through a ceramic material in order to enhance the diffusion. The mechanism for flash sintering is under debate so the effect of electric field on crystal structure is studied. The behavior of zinc oxide (ZnO) under flash sintering conditions has been investigated in situ through use of energy dispersive x-ray diffraction. Due to the anisotropic nature of hexagonal ZnO, 5 diffraction peaks were tracked during the experiment. The lattice expansion for each peak during flash sintering was used to determine the geometry of expansion of the unit cell volume characteristic of flash sintering.