HIGH RESOLUTION LASER ASSISTED LOAD DILATOMETRY FOCUSED ON SIMULTANEOUS AXIAL AND RADIAL STRAIN MEASUREMENTS FOR SINTERING CHARACTERIZATION

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Continuum description is a useful tool for sintering characterization. Homogeneous sample with uniform distribution of temperature and green density can be easily characterized by traditional dilatometry. However, this case is rather scarce. Constrained sintering is a common case where the useful information of traditional dilatometry may not be enough. E. Aulbach et al. reported a new dilatometer design where is possible to simultaneously measure axial and radial strains. This is an important step forward because, for a cylindrical shape sample, it is possible to measure the entire strain tensor. Continuum description requires constitutive relations that relates strains and stress. In order to find this relation, E. Aulbach et al. included a pressing system in their dilatometer. The present load dilatometer design is inspired in the sintering continuum description. It is similar to the system developed by E. Aulbach *et al.* The main difference is the optical table that allows a change of the laser sensors. In addition, the pressing direction is free of any other mechanisms. The optical table includes New Ports accessories (servomotors and plates) for the laser sensors positioning. Laser sensors are Beta LaserMike, the furnace is Carbolite and stress is applied to samples by mean of an Instron 5960.

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