

## **Two-Step Sintering of alumina/zirconia nanocomposite**

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Alumina has great properties like high elasticity modulus, high hardness, high refractory, and good resistance to chemical attack. Due to these properties this ceramic is widely used as structural ceramic. One property such as low fracture toughness limits the application of alumina. In order to improve existing technical always searching for better properties has been studied to control the microstructure of ceramics, reaching a homogeneous and refined microstructure. One way to obtain a microstructure that provides improved properties is controlling the firing curve during the sintering of ceramic. This work studied the viability of the application of the two steps sintering proposed by Chen and Wang and by De Jonghe for nanometric alumina and zirconia alumina. Therefore, it was done a study of literature which allowed to set the initial conditions of sintering from the results of the linear shrinkage of the samples obtained from dilatometry tests. After sintering the samples in dilatometry, each one was analysed where the results showed different than expected, the graphics of dilatometry of alumina and alumina-zirconia was similar when they should be different, and for sample of alumina the shrinkage should happen at higher temperatures and for sample alumina-zirconia the shrinkage should happen at higher temperatures than alumina. The similarity of both graphics occurred possibly due to the lower pressure used in conformation and the nanometrics samples which complicated the densification of both samples. Those results complicated the choice of the parameters of two step sintering.

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