

19/09

Synthesis and mechanical properties of alumina obtained by sol-gel process

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Pseudoboehmite powder obtained in different synthesis conditions by sol-gel process were used for obtaining sintered alumina. The corps was formed by uniaxial pressing and after that the sintering was realized in the presence of air. In the synthesis of pseudoboehmite by sol-gel process, it was used aluminum nitrate ($\text{Al}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$) solution (980g aluminum nitrate/1 L water) as precursor and it was used different conditions of synthesis. The variables of study were the temperature of pseudoboehmite synthesis and the concentration of ammonium hydroxide water solution (14wt% and 28wt%). It was obtained the flexural strength and the Vickers hardness of the corps of sintered alumina. The data were compared with the data obtained in the literature and correlated with the synthesis conditions.