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A new and economic approach to synthesize andfabricate anorthite based ceramics using kaolin andCaCO3

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Abstract : This new and economic approach to fabricateresistant anorthite based ceramics consists of Algerian kaolinand calcite (CaCO3). The anorthite (CaO·Al2O3E-Mail :zaiou_21 @yahoo.fr·2SiO) basedceramics were obtained by solid state reaction. The startingpowders were sintered at different temperatures (800-1100°C) for 1 h. The optimum sintering conditions gave arelatively higher density (2.64 g/cm3). Different techniqueswere used to investigate the physical proprieties of theprepared anorthite such as: scanning electron microscopy, Xraydiffraction, Raman spectroscopy and tensile strength. Thebest obtained 3 points flexural strength value was about 202MPa for the samples sintered at 1000 °C for 1 h. Furthermore,the best value of Vickers micro-hardness of the samplessintered at 1000 °C was 7.1 GPa. Finally, a correlationbetween microstructure and mechanical properties ofelaborated supports has been discussed.

Keywords : anorthite, Kaolin, calcite, Sintering, Vickers micro-hardness, tensile strength.