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Apresentador - **ana lucia exner godoy**

**Influence of addition of polymeric precursors of ceramics on sintering of Al<sub>2</sub>O<sub>3</sub>**

Godoy, A.L.E.; Bressiani, J.C.; Bressiani, A.H.A.

IPEN

The effects of adding polymer precursor on the sintering behavior, microstructure and hardness of alumina ceramics have been studied. Linear shrinkage of cold-pressed specimens was studied by dilatometry. Polymer sintering aid polymethylhydrogensiloxane (PMHS) was used for alumina based ceramics sintered at 1650° C. The sintered materials were characterized using: (a) helium pycnometry to determine apparent density; (b) x-ray diffraction analysis, scanning electron microscopy, transmission electron microscopy and energy dispersive x-ray spectrometry to determine the microstructure and composition; (c) Vickers indentation analysis to determine the hardness and fracture toughness. The addition of PMHS yielded alumina/mullite composites. The preparation of ceramic composites using small amounts of polymer precursor is suited for alumina based ceramics. The processing route being simple, it has the potential to enable the manufacture of complex shaped pieces.