

## DEVELOPMENT OF REFRACTORY CERAMICS WITH ADDITION OF SILICA FROM RICE HUSK ASH AND CALCINED ALUMINA

Juliana Calage Quevedo<sup>1</sup>

Marco Antonio Durlo Tier<sup>2</sup>

### Resumo:

The region of West border of Rio Grande do Sul is a largest producers of rice of Brazil. So, this culture plays a strategic role both in aspect economic and social. Rice husk ash appears with as a byproduct of great importance to geration of energy and not less importance, the residue this new process, the ashes. The energy generated through biomass has been highlighted in the national energy matrix, since it is a viable alternative from the technological, economic and ethical point of view in the ecological aspect. The ceramic industry has been seeking new technological means that append improvements to the material, both in terms of cost / benefit as well as adaptations of properties and service conditions. This research has as main objective develop refractory ceramic materials, through partial substitution kaolin clay with silica from the burning of the rice husk and by calcined alumina, the purpose of this mixture was to obtain ceramics with high mullite content. The mullite employed in the industry was discovered on the island of Mull, Scotland, which is the only stable intermediate crystalline phase in the  $Al_2O_3$ - $SiO_2$  binary system and its stability range varies from 71.8 to 74% by weight of alumina ( $3Al_2O_3.2SiO_2$  at 1,64 $Al_2O_3.2SiO_2$ ). It has properties of interest for high temperature applications, as example, low thermal expansion, low thermal conductivity, high melting point, creep resistance, good chemical stability, good thermal shock resistance and low density (Coutinho, 2007). Tests will be carried out granulometry and X-ray fluorescence to characterize the raw material. The samples will be molded in a hydraulic press with compaction pressure of 574 kN, after being burned at 1200°C. Tests of resistance to compression, three-point bending, thermal shock tests and microstructure analyzes of the material. It is intended in this way, improve the mechanical strength, toughness and thermal shock resistance of refractory ceramics.

**Palavras-chave:** Rice husk ash, calcined alumina, refractory ceramics

**Modalidade de Participação:** Pós-Graduação

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<sup>1</sup> Aluno de pós-graduação. jcallage@gmail.com. Autor principal

<sup>2</sup> Docente. marcotier@unipampa.edu.br. Orientador

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