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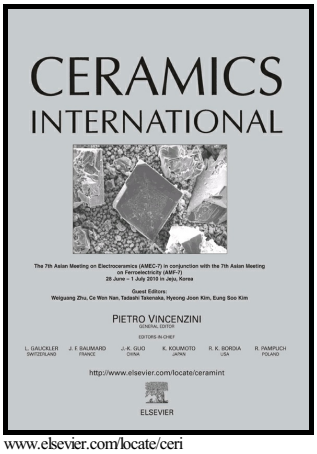

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Fly ash-based geopolymers containing added silicate waste. A review

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Abstract

This review summarizes different types of industrial wastes such as biomass ash, red mud, recycled glass and heavy metals waste, in their application for geopolymer production. These wastes, that are currently abundant and urgent to dispose of, cannot be used alone in the geopolymer process due to the not suitable SiO_2/Al_2O_3 molar ratio for this technology. For this reason, these by-products are commonly used in addition to other aluminosilicate source such as fly ash or metakaolin. Important parameters which affect the properties and performance of fly ash based geopolymers with addition of a variety of wastes are discussed based on a comprehensive literature review.

Keywords: Geopolymers; Fly ash;

1. Introduction

Concrete is the most produced and used construction material in the word. It is cheap and strong but it has environmental drawbacks. The cement production industry is one of the largest CO_2 emitting industrial sectors, it is responsible for 5% of the global CO_2 emissions[1]. Cement manufacture requires extreme heat