

## **Comparison of Fly Ash and Red Mud Mixture as a Building Material**

ZAFER DIKMEN<sup>1</sup>, SEDEF DIKMEN<sup>1</sup>

<sup>1</sup>Anadolu University Science Faculty Department of Physics zdikmen@anadolu.edu.tr

<sup>1</sup>Anadolu University Science Faculty Department of Physics sdikmen@anadolu.edu.tr

This study is concerned with recycling waste materials, focusing on the development of building materials from coal fly ash and red mud. The purpose of this research was to determine the usability of producing building materials with the mixture two different fly ash and red mud. Fly ash and red mud were mixed by different weight ratio, and the mixture was wet milled in a planetary ball mill. After milling, the mixture was pressed into a cylindrical form having a diameter of 15 mm and length of 30 mm without using any binder. The cylindrical samples were sintered at different temperatures between 850-1150 °C with rate of firing 6 °C/min. The crystallization behavior and morphological properties were carried out with the help of X-ray diffraction (XRD), field emission-scanning electron microscopy (FE-SEM), and energy dispersive X-ray spectrometer (EDX). In addition, various physical properties, such as bulk density, compressive strength and water absorption were determined at each sintering temperature.

As a result samples with red mud made by mixing two different fly ash samples were compared with each other.