Characterisations of raw material derived from natural sand of albanian coastline-possible applications

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Abstract

In this work the natural material derived from sand of Albanian coastline is studied. The raw material is obtained from the quartz sand processing plant (the former called coastal sand enrichment department). The structural characterization of the material is performed using SEM and XRPD analysis. From the results it can be concluded that the raw material represents a conglomerate of several minerals[1]. The presence of rutile is identified, although in small quantities. The main mineral is magnesium ferrite followed by quartz and titanium magnetite. The others are in minimal quantities. Based on the chemical analysis with ICP-MS, the chemical composition of the material was determined confirming the presence of TiO_2 (2.50%), Fe_2O_3 (24.07%) and Cr_2O_3 (2.65%). The effect of TiO_2 has been proven in many studies for different applications[2]. We have tried to study two applications of this titanium magnetite containing material: i) the adsorption capacity to Cu by means of adsorption kinetic models [3]and ii) the analytical performance of modified carbon paste sensor using redox couple Fe(III)/Fe(II) and determination of b-blockers in environmental water systems.

References

[1] http://www.handbookofmineralogy.org/pdfs/rutile.pdf

[2] Imran A., Mohd S., Zied A. A., Abdulrahman A., RSC Adv., 2018, 8, 30125

[3] Ghazi et al, Journal of Geography and Earth Science, 2013, p.01-08

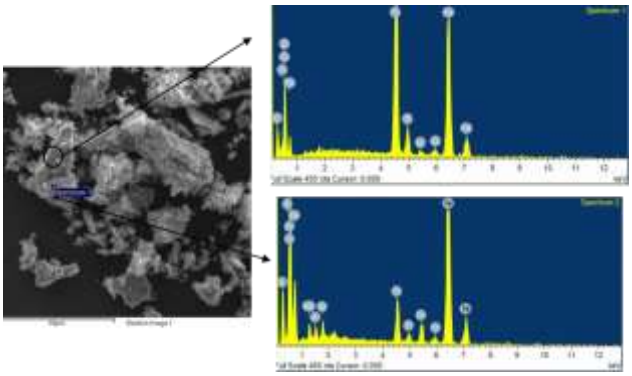

Figure 1. SEM analyses of mechanical activated material

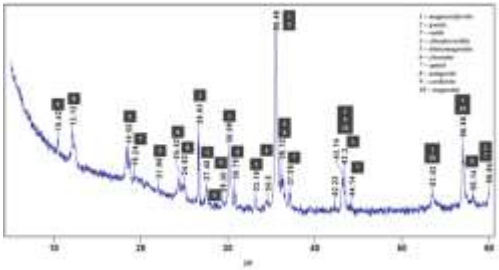

Figure 2. X-ray diffractogram of the raw material