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Characterization of Sandstones Resources For High Value

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ABSTRACT

Algeria has enormous and numerous resources types and varieties of silica, that can be a potential source in global issue of industry and technology namely photovoltaic field. Our work consists on database development of different varieties of quartz and sandstone resources in Algeria, the study and classification of the deposits according to their technical characteristics. Within the framework of our present work, we used the geographic information system (GIS), through the digitalization of the Ministry for Industry and the Mines data's[1]. The GIS is allowed to listed the larger part of silica deposits in Algeria with their purity and selects the rich resources that exceed 97% of SiO_2 contents. Our GIS database is manageable and georeferenced, and can be updated by recent developed data.This preliminary approach is continued by processing data, and the laboratory characterization analysis carried on three selected deposits in Algeria. The microscopic and chemical analysis are confirmed the richness of studied sandstones with more than 97% content of SiO_2. These resources have a large extension, and suitable site from technical point of view. Therefore, their interesting chemical composition requires a deep study intended to the photovoltaic fields.The identification and characterization of high purity of silica in Algeria opens a large field of application.

Keywords: Deposit, Evidence data, Photovoltaic, Silica, Algeria.

1. Introduction

Algeria has enormous resources types and varieties of silica. The most commonly exploited types of deposits dedicated to the current application of electrometallurgy are quartz, quartzite, and sandstones. The identification and characterization of this high purity silica in Algeria can be open large application in electrometallurgy and photovoltaic fields.

2. Experimental

A Geographic Information System (GIS) is digital technology that integrates hardware and software to analyze, store, and map spatial data, which become important tools for geology, as geological maps and GPS systems. Our systematic approach of study and exploration has been based on a global vision of silica resources, namely sandstone through digitization of the Ministry of Industry and Mines data's (1), using ARCGIS 10.3 software computerized workspace. Nord Sahara 1959/UTM are used as projection system of coordinate.

2. Results and Discussion

Our work consists in database's conception of different varieties of quartz and sandstone resources in Algeria (Fig.1), the classification of the deposits according to their technical characteristics (Fig.2), adding or modifying data. Our GIS database is manageable and georeferenced, can be updated by recent data developed by our research project or by other research institutions.

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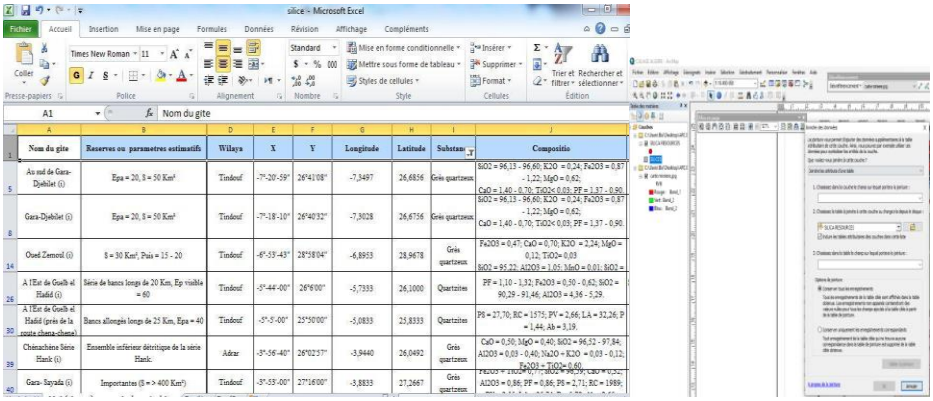

Figure 1: excel database to the arcgis software

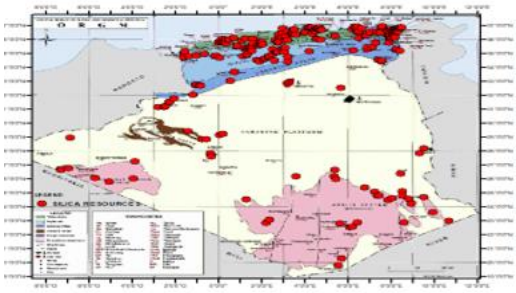

Figure 2: geological algerian map with projection of silica resources (sandstone).

3. Conclusions

GIS is useful tool in managing and treatment of silica resources data. This preliminary work will be continued by processing data, the laboratory characterization analysis as well as the confirmation of data or other experiment to find at the end the Algerian high silica resources intended for electrometallurgy and PV solar fields.

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