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Book of Abstracts

THEME:

Innovative scientific research: A tool for socioeconomic development and environmental sustainability

Federal University of Technology Minna,
Niger State, Nigeria

THEME OF THE CONFERENCE

Innovative scientific research: A tool for socioeconomic development and environmental sustainability.

SUB-THEMES OF THE CONFERENCE

- Advancement in Materials Science and Technology for Sustainable Development
- Modeling, Theory and Applications
- Climate Sustainability and Sustainable Development Goals
- Science, Technology and Innovation, and the Journey to a Net Zero Energy Future for Africa

PRE-CONFERENCE WORKSHOP TITLE

Publication in Impact Factor Journal: Challenge and Breakthrough

combination of detailed outcrop and microfacies analyses leads to a better understanding of paleogeography of carbonate rocks which is relevant to resource exploration and exploitation.

Keywords: Benue trough, Gongola basin, Kanawa Member, Pindiga Formation, Carbonate ramp

2024SPSBIC0064

Field Mapping and Mineralogical studies of rocks in parts of Zungeru sheet 163 SE using Thin Section Petrography and X-Ray Diffraction Method

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Abstract
Mineralogical studies of rocks were carried out in parts of Gidan Kwano with an aim of investigating the mineralogical composition of the rocks using thin section petrography and X-Ray Diffraction method. The study area lies between latitudes 9°30'10"N - 9°31'50"N and longitudes 6°26'10"E - 6°27'50"E covering an aerial extent of 3.24km^2. Geological mapping of the area was first carried out to reveal the rock types which was then followed by preparation of thin sections of carefully selected representative samples of rocks in the study area. X-Ray Diffraction was the carried out on the same selected samples to reveal geochemically the mineral contents of the rock. The geological mapping revealed that the area is underlain by granites of medium to coarse grain; with color varying from leucocratic to melanocratic. The minerals that could be identified in hand specimen are mica, quartz and feldspar and structures such as joints, faults, quartz veins and pegmatitic veins were observed on the outcrops. The thin section petrographic revealed that the rocks contained all the minerals that were observed in hand specimen with high modal percentage of quartz and orthoclase. The results from the XRD revealed the presence of the following minerals in varying proportions; muscovite, quartz, orthoclase, plagioclase, amblygonite and albite. Amblygonite is one of the few major lithium ores and was found to be present in the sample taken from the pegmatite vein. Lithium sourced from amblygonite could be used to produce aluminum products, batteries, ceramics, glazes and glass. Further geological, geophysical and geochemical prospection is recommended to be carried out in the study area to determine the economic prospect of this mineral.

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Groundwater Potential Investigation of Part of Zungeru Sheet 163 NW, Gidan Kwano Area, Minna, North Central Nigeria.

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Abstract
Groundwater exploration was carried out in part of Gidan Kwano Minna in other to characterize the aquifer and locate viable points for siting of productive boreholes. The Electrical Resistivity method using the Schlumberger array was employed for the subsurface geophysical investigation. A total of 8 vertical electrical soundings was carried out across the study area to a maximum AB/2 of 90m. HA, H and HK curve types were observed in the study area. VES points 1,3,6,7,8 have no prospect for groundwater as no fracture was within the subsurface to the depth of investigation and the overburden is also not thick and productive. However, VES points 2,4 and 5 have a good potential for groundwater as fractures were observed below a depth 80m and also the overburden thickness is also appreciable to yield substantial water.