Isolation and Characterisation of High Grade Nanosilicon from Coastal Landform in Ilaje Local Government Area of Ondo State, Nigeria.

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ABSTRACT

This research work investigates the isolation and characterisation of high grade nanosilicon from coastal landform in Ilaje Local Government Areas of Ondo State, Nigeria. The landform in the study areas have different colours and are presumed to contain silicon considering their physical textures. Sand from the selected study areas were categorised into different forms according to colour while silicon was isolated using magnesium as reducing agent. The results of the energy dispersive x-ray (EDX) analyses of the isolated silicon ball-milled for 24 hours revealed that silicon has the highest percentage among the elements observed in the spectra. The SEM revealed that the morphology of nanosilicon from Zion, Micheal-ugbonla and Oluwa Glass coastal landform are agglomeration of particles with irregular shapes having average particles sizes of 58.98 nm, 77.82 nm and 37.27 nm respectively. The XRD spectral of the nanosilicon shows sharp distinct peaks which indicate crystalline nature of the samples. From the results obtained, it can be concluded that, the percentage of nanosilicon value obtained ranges between 65.23% to 80.30% are high enough and can find useful industrial applications in areas like lithium ion battery, biomedical, photovoltaic/ solar Cell and computer industries etc.

Key words: Nanosilicon, Coastal landform, EDX, SEM, XRD