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## Microstructure characterization of natural magnetite from sand marina beach by high energy milling (Article) (Open Access)

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### Abstract

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In this work, we performed an experimental investigation the change of microstructure of magnetite by high energy milling -3D (HEM-3D) method using planetary ball milling at 400 rpm speed. The present studies mainly focusses on the effect of milling on crystallinity and phase of magnetite by XRD, particle size by PSA and the morphology by SEM. The increasing of the ball mass in the milling process, mass ratio magnetite : ball (P/B) 1: 1, 1: 3 and 1: 5 give the magnetite particles smaller ( $< 1\mu\text{m}$ ), the crystallinity decreases but the peaks at (2 2 0), (3 1 1), (4 0 0), (5 1 1), and (4 4 0) were keep appearing. This shows that the phase of cubic spinel does not change. Rising the milling time for 1 h, 3 h and 5 h can lead to decreasing of size and crystallinity. Even milling time for 5 h on mass ratio of magnetite : ball (P/B) 1: 5 causes the magnetite phase to change to amorphous. © 2018 Oriental Scientific Publishing Company. All rights reserved.

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### Substances



### Author keywords

High energy milling -3D.

Microstructure

Natural magnetite

Sand marina beach

### Funding details

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