

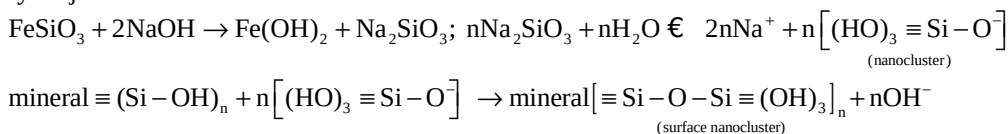
Nanochemistry and Nanobiotechnology

Chemical transformations of nanoparticles during mechanochemical alkaline dispersion of sponge iron

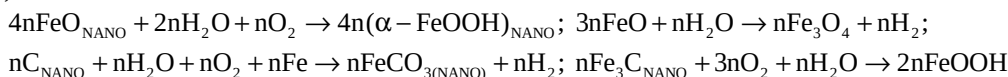
A.V. Panko, E.V. Ablets, I.G. Kovzun

*Institute of biocolloid chemistry named after F.D.Ovcharenko, NAS of Ukraine.
42, Ak.Vernadskogo Blvd., Kyiv, Ukraine, 03680.
E-mail: wiz@list.ru*

Results of iron ore nanocarbon recovery in obtaining of sponge iron and its subsequent alkaline iron cleaning brought to conclusion that such cleaning is the most effective way to separate metal from non-metallic impurities [1]. The importance of nanochemical reactions was shown, accompanying the cleaning process, in justifying the optimal method of metal grinding, containing impurities of wustite nanoparticles (FeO), carbon, cementite (Fe₃C), and microparticles of silicates, phosphates, arsenates, sulfides, etc. The cleaning process is accompanied by major nanochemical reactions:



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Nanoclusters and chemicals (formed during these processes) are being absorbed in contact zones, and promote separation of mineral admixtures from metal under mechanical impact or abrasive loads. Mineral admixtures have been passed into a dispersion medium in the form of individual particles [2, 3].

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3. Oleinyk V.A, Pan'ko A.V., M.O. Ilyashov M.O., Kovzun. I.G., Protsenko I.T. Enrichment of Iron Ores with Use of Nanomaterials Based on the Alkaline Silicates // Metallofizika I Noveishie Tekhnologii. – 2011. – 33. – P.587-594.