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α-Fe_2O_3 Nanomaterials synthesized by a new Hydrothermal Technique have Magnetism

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Nanoparticles were synthesised in an aqueous-organic micro emulsion under mild alkaline conditions utilising a hydrothermal synthesis technique [1,2].

In the presence of a cationic surfactant, cetyltrimethylammonium bromide, the condensation reaction was optimised (CTAB).

The size and form of the -Fe_2O_3 nanoparticle were shown to be highly influenced by pH, oxalic acid, CTAB, and tetramethylammonium hydroxide (TMAOH, alkali source) concentrations [3].

Transmission electron microscopy was used to confirm the particle size homogeneity, and powder X-ray diffraction was used to characterise the single phase of the Nano crystalline -Fe_2O_3.

The Mössbauer study had a sextet pattern with a lower internal field than the bulk counterpart [4,5].

The temperature variation of magnetization showed a broad maximum at around 125 K, while the field-cooled effect of magnetization showed a broad maximum at around 125 K.

Whereas the practice area consequence of magnetic properties had shown fragmentation among both field cooled and zero field cooled magnetization up to 340 K, this negative force chilled impact of a magnetism did not.

The magnetic curve study, and the high stopping temperatures, revealed a significant anisotropic.

The magnetization curve was used to estimate particle size, and the results were found to be very close to those of the TEM.

Because of their fundamental scientific interest as well as its commercial value, chemical nanotechnology of homogeneous particle diameter has become a focus of current study.

Such nanostructures have very fascinating electrical, optical, magnetic, and chemical capabilities that their bulk equivalents do not have.

Nanoparticles are also useful in a variety of technological applications, including cooling, medical imaging, better drug, and other biological applications, as well as catalytic.

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