Abstract Submitted
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The production of magnetic nanoparticles of Iron Oxide by arc discharge in water HAMID REZA YOUSEFI, SARA FATHOLLAH, MARYAM NIKEYN, SHOHREH KHATAMI, Plasma Physics Research Center, Science and ResearchBranch, Islamic Azad University, Tehran, Iran — Nanoparticles can be utilized for any practical application. In recent years; considerable attention has been paid to iron oxide magnetic. Iron oxide nanoparticles are the class of nanoparticle which can have useful magnetic properties. In this research, magnetic iron oxide nanoparticles were produced by Arc discharge method in water. Structural analysis carried out by X-ray diffraction analysis (XRD), Scanning Electron Microscopy (SEM), and Spectrophotometer. Various magnetic nanoparticles like iron carbide (Fe3c), magnetic iron oxide (magnetite /maghemite) are obtained by arc discharge method in water. In this work have been showed, the influence of the time duration on the number of magnetic nanoparticles and the influence of the gap between the two electrodes on particle structure and size distribution. Furthermore, when iron nanoparticles are used under applied magnetic field, the particles would move in the direction of magnetic field. When the magnetic field is removed, the particles stop moving and still remain stably suspend in the dielectric liquid.

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