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Abstract
We present the study of magnetic behavior of iron-vanadium spinel (FeV_2O_4) nanoparticles with mean crystallite sizes ranging from 3.7 to 21.5 nm. The magnetic properties of samples can go from paramagnetic to ferromagnetic depending on the sizes of FeV_2O_4 nanoparticles. In addition, magnetic ordering temperatures, coercivity and magnetization decrease as the crystallite size decreases. For samples with crystallite size greater than 7.4 nm, a wasp-waisted hysteresis loop and loop shift were found during the zero-field-cooled (ZFC) and field-cooled (FC) measurements, respectively. The details of the mechanism leading to the observed results are discussed based on the existing models.
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