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Particle interaction energy and hysteresis in polar and non-polar medium based magnetic fluids

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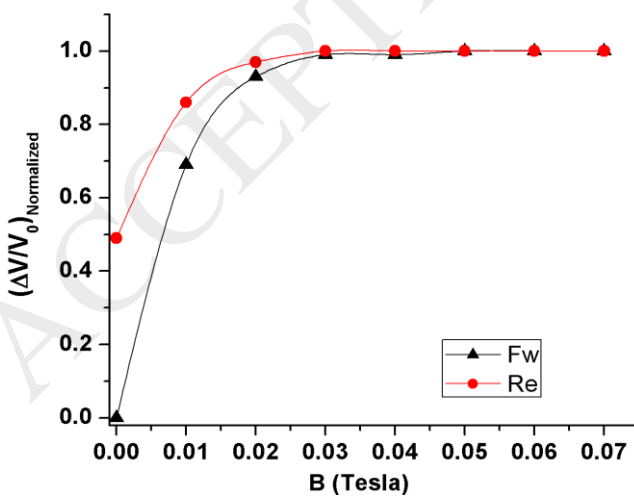
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Graphical Abstract

Inner structural properties of two different types of magnetic fluids (MFs) under the application of an external magnetic field were investigated by using the ultrasonic propagation velocity method. Specifically, we thoroughly investigated a number of MF-inherent phenomena that are important for determining the ultrasound propagation velocity; these phenomena included the effect of the medium, particle interactions, anisotropy, Brownian motion, and hysteresis. Using the measured data, we show that it is possible to explain the observed structural changes in the polar- and non-polar-medium-based MFs.



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