

Abstract Submitted  
for the MAR05 Meeting of  
The American Physical Society

**AC electrokinetics of microparticles in suspensions** K.W. YU, Chinese University of Hong Kong — Under the application of electric fields, the structure of electrorheological (ER) solids can be changed from the body-centered tetragonal lattice (ground state) to other lattices. For a particle in the lattice, we have derived its dipole moment by taking into account both the local-field effect arising from all the other particles and the multipolar interaction between two touching particles, through the Ewald dipole formulation and multiple image method. To simplify the study, the dipole moments have been expressed in the dielectric dispersion spectral representation (DDSR) exactly. To this end, it has been found that the electrorotation (EOR) spectrum of ER solids can be affected significantly by the structure transformation. Our results have been understood in the spectral representation theory. Thus, it is possible to monitor the structure of ER solids by detecting its EOR spectrum.

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Date submitted: 01 Dec 2004

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