Dielectric behaviors of polydisperse cell suspensions\(^1\) C.T. YAM, The Chinese University of Hong Kong, J.P. HUANG, Max Planck Institute for Polymer Research, and The Chinese University of Hong Kong, K.W. YU, The Chinese University of Hong Kong — It is of technological importance to separate various cells which differ from one another in their dielectric properties. For instance, living cells have different conductivity from that of dead cells resulting in polydisperse cell suspensions. As a theoretical model, we consider a bidisperse suspension in which two different types of spherical biological cells are dispersed in a host medium, subject to an external ac electric field. The Clausius-Mossotti factors of the cells with isotropic, lossless dielectric membrane and with an intrinsic dispersion due to the presence of mobile hydrophobic ions within the plasma membrane have been given by Roth and Dignam [1]. A dielectric dispersion spectral representation (DDSR) is employed to express the Clausius-Mossotti factors of the two types of spherical particles as a series of sub-dispersions [2]. With DDSR, the characteristic frequencies and the corresponding dispersion magnitudes of the various sub-dispersions are determined for the individual particles in suspension [3,4]. We will report the effects of medium conductivity and volume fraction on the dielectric dispersion spectra.

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C.T. Yam  
The Chinese University of Hong Kong