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**Dielectric dispersion of clustered living cells via the boundary integral equation method** SAI KIT YUNG, KIN LOK CHAN, KIN WAH YU, The Chinese University of Hong Kong — We have developed a boundary integral equation (BIE) method for computing the dielectric response of clusters of biological particles like living cells. In the BIE, we formulate a surface integral equation for the scalar potential for an arbitrary number of particles of various shapes [1]. BIE method avoids matching the complicated boundary conditions on the surfaces of the particles. Numerical solutions of the eigenvalue equation yield a dielectric dispersion spectrum through the spectral representation [2]. While BIE method is valid for arbitrary surfaces, we confirm it for two approaching cylinders and a concentric cylinder. In many typical cases, the numerical results are in excellent agreement with the exact analytic results. Moreover, BIE method offers a convenient way to compute the alternating current responses, and hence the dielectric dispersion of clustered cell suspensions.

[1] Yu KW, Wan JTK, Computer Physics Communications 142, 368 (2001).

[2] Huang JP, Yu KW, Phys. Rep. 431, 87 (2006).

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