

### **Asynchronous traveling-wave induced linear motion of living cells.**

Fuhr, G. R., Hagedorn, R., Müller, T., Benecke, W., Wagner, B., Gimsa, J., 1991. *Studia biophysica* 140:79–102.

**Abstract:** *An electrodynamic traveling-wave induced linear transfer of dielectric particles such as living cells and artificial objects of microscopic dimensions is described. Various configurations of microelectrodes obtained by microfabrication techniques were realized on silicon or glass substrates. For an effective manipulation of particles immersed in weak electrolyte solutions (i) electrode geometries corresponding with particle size and (ii) high frequency traveling-waves have to be used. The motion of particles can be characterized as traveling-wave dielectrophoresis (TWD). Microparticle velocities of some hundred  $\mu\text{-m/s}$  have been achieved applying phase-shifted rectangular pulses with amplitudes between 4 and 15 volts. A theoretical estimation of the particle motion is given.*

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