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Dielectrophoresis and other electrokinetic phenomena in microsystems – an introduction Dielectrophoresis (DEP) is a phenomenon in which force acts on polarizable particles in an inhomogeneous electric field. Depending on various parameters, dielectrophoretic force can attract particles to or repel them from areas of high electric field. DEP is often accompanied by other electrokinetic phenomena, such as induced-charge or AC electroosmosis. DEP can be applied to the fabrication of miniaturized laboratory devices (lab-on-a-chip), as well as assembly of micro and nanostructures. This presentation is an overview of electrokinetic phenomena that affect the process of assembly of nanoparticles into nanostructures. This overview will be accompanied by finite element calculations.

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