

Dynamic Control of Biomolecule Interactions in Fluid Field

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Nowadays, many researchers have investigated the conjugation of biomolecules to nano-materials, which has led to the development of hybrid materials with new activities. As biomolecules have both nonspecific binding and specific binding, an enormous number of non-covalent bonds between biomolecules and NP surfaces or ligands will form. For improving the detection of blood samples in vivo, which are often very rare and mixed with a lot of interfering substance, we tested several kinds of methods to detect our specimen with considerable nonspecific interactions existed between these biomolecules. The distinction between non-specific and specific bonding can be observed through magnetic nanoparticle technology, bio-panning technology, salt concentration controlling and many other methods. Specially, by hands of controlling of the vortex strength, we proposed a dynamic method in vortex flow for discriminating nonspecific adsorption and specific adsorption, which results shown very high accuracy.