

ABSTRACT

There is provided a method for detecting binding of a DNA-binding protein to a target recognition sequence. The method comprises mixing in a reaction buffer a first set of metal nanoparticles, a second set of metal nanoparticles and a DNA-binding protein to form a mixture, and detecting the aggregation state of the mixture of metal nanoparticles. Each set of metal nanoparticles has a conjugated double-stranded DNA molecule having a single-stranded overhang at one end. The single-stranded overhangs of each set of DNA-conjugated metal nanoparticles are complementary to each other such that annealing of the complementary overhangs results in formation of the target recognition sequence that specifically binds the DNA-binding protein. The reaction buffer comprises an ionic species in a concentration sufficient to result in aggregation of the metal nanoparticles upon annealing of the first and second single-stranded overhang.