

### Ultrafast Colorimetric Detection of Nucleic Acids Utilizing the Oxidase Activity of Cerium Oxide Nanoparticles

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In this study, we describe a new and simple colorimetric method for the detection of nucleic acids, which relies on the target DNA induced inhibition of the oxidase activity of CeO<sub>2</sub> NPs. Using this novel strategy, samples can be analyzed by using the naked eye within a few minutes and without the need for post-purification of PCR products, modifications of either the CeO<sub>2</sub> NPs or DNA, and tedious salt treatment step, which are generally required in gold nanoparticle-based DNA detection. The clinical utility of this simple and efficient colorimetric detection method has been demonstrated by its application to the diagnosis of *Chlamydia trachomatis* pathogen infection by using a human urine sample. Furthermore, the factors involved in nucleic acid shielding of the oxidase activity of CeO<sub>2</sub> NPs have been systematically investigated.